HELLENIC SOCIETY OF ALGOLOGY
GREEK CHAPTER OF IASP & EFIC

14th PANHELLENIC Algology CONGRESS

June, 6-8 2024

Aquila Atlantis Hotel

HERAKLION
CRETE

Celebrating 30 years

UNDER THE AUSPICES OF

ΠΕΡΙΦΕΡΕΙΑ ΚΡΗΤΗΣ
REGION OF CRETE

Περιφέρεια Κρήτης/Region of Crete
@creteregion

myrtaly congress

Professional Congress Organizer (P.C.O.): MYRTALY CONGRESS
2 Neomartiros Ioannou Square, 452 21, Ioannina, Greece, **T:** +30 26510 73519, 694 8649559, **E:** info@myrtalycongress.gr, **W:** https://myrtalycongress.gr

ABSTRACT BOOK

14º

Panhellenic Congress

Algology

6-8 June 2024

Hotel Aquila Atlantis, Heraklion

Contents

VITAMIN C AND PAIN

Giannis Chronakis
Director of the National Health System (NHS), Anesthesiology Pain Therapy & Palliative Care, General Hospital of Rethymno. Member of the Board of the Hellenic Society for Pain Therapy & Palliative Care

Vitamin C (L-ascorbic acid) is a water-soluble vitamin, a natural organic compound with antioxidant properties. It is a crystalline white solid, although samples with impurities or contamination may appear slightly yellow. It is highly soluble in water and forms slightly acidic solutions. The name derives from the prefix "a-" and "scurvy," a disorder characterized by gum bleeding, tooth loss, arthritis, and slow wound healing, all due to a lack of vitamin C.

Scurvy originates from a medieval latin word and is a disease, typically affecting sailors who had to consume preserved foods low in vitamin C (canned or dried food). It manifests with fever, cachexia, anemia, bleeding, and gastrointestinal issues, along with musculoskeletal pain due to vitamin C deficiency. European explorers began navigating the then-unknown Atlantic Ocean in the 15th century. The biggest challenge was food, low in nutrients. The lack of fresh vegetables and fruits (as there was no way to preserve them for long periods) was the main cause of sailors' deaths. Scurvy develops when the human body does not receive vitamin C for a prolonged period, typically between sixty to ninety days.

The initial signs of the disease include weakness, easy fatigue, muscle pain (especially in the legs), and swollen, bleeding, decaying gums. Eventually, all joints and muscles begin to ache, skin sores form, gangrene mostly affects the lower limbs, and the body weakens to the point where death occurs either due to infection with high fever or bleeding. In 1747, it was observed that citrus fruits reduced the symptoms of the disease, although it wasn't known then that the illness stemmed from vitamin C deficiency. In the late 18th century, another experiment to combat scurvy occurred: during a two-year voyage, a mixture of rum, water, sugar, and lemon juice was given to sailors, and the symptoms of the disease were eradicated. By 1795, natural lemon juice became a part of the daily diet on ships, conquering a disease that had claimed the lives of many sailors!

Due to the insufficiently addressed analgesic action of vitamin C against acute pain, this meta-analysis aims to investigate its effectiveness against acute postoperative pain. A total of seven randomized controlled trials with placebo were identified from PubMed and Cochrane Library databases.

The pooled analysis showed a lower pain score and reduced morphine consumption (mean difference) in the vitamin group compared to the placebo group within 1-2 hours. In the postoperative 24 hours, lower pain scores and morphine consumption were also observed in the vitamin group. Subgroup analyses demonstrated significant reductions in pain severity and morphine needs immediately (1-2 hours) and 24 hours post-surgery in patients receiving intravenous vitamin C, but not in the oral subgroup. These findings suggest significant reductions in pain scores and opioid requirements up to 24 hours postoperatively, indicating the effectiveness of perioperative vitamin C use. Further large-scale trials are warranted to clarify the optimal intravenous dosage and its effectiveness against chronic pain in the context of postoperative pain management.

The role of vitamin C in reducing pain associated with diabetic neuropathy (interventionalstudy).
Methods: This open parallel interventional study was conducted in a tertiary care public hospital in Pakistan from April 2019 to March 2021. A total of 300 type II diabetics with recently diagnosed painful peripheral diabetic neuropathy of any gender were enrolled. The intervention group received 60 mg of duloxetine along with 200 mg of oral vitamin C. The control group received 60 mg of duloxetine without any additional intervention. Patients were asked to return for follow-up after 12 weeks. The mean Visual Analog Scale (VAS) score was significantly lower in both the intervention (554 ± 081 vs. 672 ± 090; p-value: <00001) and control groups (591 ± 080 vs. 679 ± 094; p-value: <00001) at week 12 compared to day 0. However, the VAS score in the intervention group at week 12 was significantly lower compared to the control group (554 ± 081 vs. 591 ± 080; p-value: 00002).
Results: The use of vitamin C could be cost-effective and a safe and useful adjunctive therapy for pain associated with diabetic peripheral neuropathy.

KETAMINE IN ACUTE AND CHRONIC PAIN - WHAT'S NEW

Frantzeskos Georgios
Consultant Anaesthetist – Pain Clinic University Hospital of Heraklion Crete

In the last two decades, there are more than 800 publications on the use of ketamine in the treatment of both acute pain in patients presenting to the emergency department (ED) and postoperative and chronic neuropathic pain, which is its main field of application.

Ketamine was discovered in 1962 and was licensed for use by the FDA in 1970. It was widely used for anesthesia in the Vietnam war because of the hemodynamic safety it provides. No other drug combines hypnotic, analgesic and amnesic properties at the same time and is therefore characterized as a "unique drug".

Ketamine acts as an antagonist of CNS- NMDA receptors even in low doses, providing analgesia in both acute and chronic pain states. At higher doses it also acts agonistically on opioid , adrenergic and dopaminergic D2 receptors, in the descending inhibitory serotonergic pathway and GABA interneurons of the spinal cord, while it has inhibitory effect on cholinergic receptors. It also exerts an anti-inflammatory effect, reducing postoperative levels of IL-6 and TNFα, has anti-opioid hyperalgesia actions, limits microglia and astrocyte activation in neuropathic pain, and reduces or reverses opioid tolerance.

In recent years, in addition to intravenous administration, intranasal administration is also of interest, which is used more and more often especially in the EDs, due to its ease of use, since it acts within 10 minutes with a duration of action of up to 120 minutes. However, the increase in ketamine use is accompanied by a lack of large-scale and correct methodology studies to guide treatment. In this context, three scientific societies ASRA, ASA and AAPM in 2018 issued guidelines for its use in acute and chronic pain.1

Use of Ketamine in the ED

As of 2017, the American College of Emergency Physicians recommends that the treatment of acute pain in the ED begins with non-opioid agents, specifically low dose ketamine (LDK). The optimal analgesic dose of ketamine varies widely in the literature and ranges from 0 .15 to 0.5 mg/kg. A dose of 0.5 mg/kg is associated with a higher rate of adverse effects. Many authors define a safe and effective analgesic dose: intravenous (IV) bolus of 0.15–0.3 mg/kg , intranasal 1 mg/kg, or intramuscular 0.5–1 mg/kg. There are many publications on its use in ED, such as in severe acute pain in patients with renal, hypoxic or hypercapnic respiratory deficiency2, for sedation and analgesia in critically ill patients with hemodynamic instability3, in patients with acute pain who are dependent on substances or who are being treated with buprenorphine, methadone or naltrexone4. In all these studies ketamine shows comparable pain reduction to opioids with mild adverse effects and psychological reactions that subsided shortly. Similar findings are confirmed in the recent Ketamorph5 study at the prehospital level. Regarding the use of intranasal (IN) ketamine in the ED in a recent meta-analysis6, it is concluded that IN ketamine is not inferior to IV analgesics and may have a role in ED in such conditions.

Ketamine in acute postoperative pain

There are many publications on its use in acute postoperative pain. Ketamine reduced postoperative pain scores, decreased perioperative opioid requirements, increased time to first analgesic requirement, and decreased postoperative nausea and vomiting. It is

more beneficial in case of VAS > 5 or increased opioid requirements, i.e. in major operations, while it offers no particular benefit in operations with moderate pain. The guidelines1 recommend it in patients with severe postoperative pain (moderate evidence) in the form of an intravenous bolus up to 0.35mg/Kg and a continuous infusion < 0.5mg/Kg/h. They also recommend avoiding it in patients with severe cardiovascular or liver disease, increased intracranial or intraocular pressure, pregnancy and active psychosis. The question of whether it reduces the incidence of chronic postoperative pain has not been answered and we await the results of a large multicenter study of the Rocket trial in 4484 patients.

Ketamine in Chronic Pain

Heterogeneity of studies limits conclusions about chronic pain. The guidelines1 recommend starting an infusion of a minimum dose of 80 mg administered over 2 hours and reassessing the patient for a possible new infusion (moderate evidence). It seems that the best indication of the chronic pain syndromes is the Complex Regional Pain Syndrome (CRPS) which has moderate evidence (grade B), or the spinal cord traumatic lesion (low evidence, grade C), while in the other chronic pain syndromes it does not seem to help (weak or no evidence).

Ketamine in Palliative Care in Refractory Chronic Cancer or Benign Pain1

It is recommended as a third-line drug in cancer pain and as a sixth-line drug by intrathecal injection, in resistant cancer or benign pain, because the evidence is currently insufficient for safe conclusions.

Are repeated injections safe?

Because there are reports of hepatotoxicity and bladder inflammation, which are reversible upon discontinuation, it is recommended not to perform more than one infusion per month.

Bibliography

1.Consensus Guidelines for the Use of Ketamine in the Management of Acute and Chronic Pain 2018. Reg Anesth Pain Med. 2018;43:521–546
2. Can. J. Emerg. Med. 2018;20(1):36-45
3. Prehosp Disaster Med. 2016;31(5):563-9
4. Am J Emerg Med June 2017; 35(6), 918-921
5. KETAMORPH study. JAMA Netw Open. 2024 Jan 2;7(1):e2352844
6. J Clin Med 2021 Sep; 10(17): 3978

IS THERE A PLACE FOR NITROUS OXIDE IN THE EMERGENCY DEPARTMENT FOR ACUTE PAIN MANAGEMENT?

Katerina Tsirogianni
Anesthesiologist, Director of the Anesthesiology Department and Pain Management Unit. General Hospital of Katerini. Greece

Nitrous Oxide (N_2O) is a colorless gas, with a slightly sweet smell and taste, non-flammable, but supports combustion to the same degree as oxygen, as it decomposes into N_2 and O_2 above 450°C. Inhaled N_2O causes euphoria and has rightly been called laughing gas. Although it was isolated in 1772 by Joseph Priestley, it was the dentist Horace Wells in 1884 who first realized the analgesic properties of N_2O and its applicability as an anesthetic. It is the least potent inhaled anesthetic agent, as a concentration of 104% is required to achieve the minimum effective concentration (MAC) and therefore cannot be used as a sole anesthetic agent. It causes inhibition of excitatory glutamatergic neurotransmission through reversible inhibition of NMDA receptors and possibly hyperpolarization of neurons through TREK-1 potassium channels. Its value lies mainly in its analgesic properties via supraspinal action (supraspinal release of endogenous opioids, activation of opioidergic neurons and supraspinal GABA A receptors inhibition) and spinal action (activation of descending modulating noradrenergic pathway in dorsal horns and activation of spinal GABA A receptors). The minimal overall effect on the respiratory system (reduction of tidal volume, but simultaneous increase of respiratory rate) and on the hemodynamic condition (immediate myocardial depression, but central sympathetic stimulation) and non-muscle relaxant properties, provide the comfort of use N_2O during the administration of general anesthesia, procedural sedation and analgesia, dental anesthesia and acute pain management.

In a meta-analysis of 14 RCTs and 1751 adult patients, N_2O was compared with placebo and common analgesic agents for acute pain management in ED for similar interventions. Superiority of N_2O was found only over placebo, but also a greater incidence of dizziness and vomiting that stopped soon after stopping N_2O administration. It could therefore be an option for adults in ED, although there are conflicting opinions.

The results, when N_2O is administered to children in the ED, seem more positive. Defenders of N_2O believe that there is a better management of children's pain, anxiety and discomfort, an improvement in the pain experience in the emergency room, and an avoidance of needle phobia. In a relevant 5.5-year study applied to patients aged <18 years (33 days - 18 years), was found that with a usual mixture of 50% N_2O with O_2 the side effects are limited: 95.7% without side effects (1, 6% nausea, 2.2% vomiting, 0.4% sweating) and 9 patients had potentially serious events which were treated. Interestingly, patients 1 - 4 years of age had the lowest rate of adverse events. Patients <1 year, 5 - 10 years and 11 - 18 years had no difference between them. Patients with 15-30 min or >30 min N_2O administration were 4.2 or 4.9 times more likely to experience adverse effects. Therefore, the time of use is also of great importance in the occurrence of complications.

It is clear that N_2O cannot cover very painful situations by itself. It can be applied to suprapubic puncture, urinary catheterization, lumbar puncture, placement of venous catheter, simple wound suturing, simple fracture reduction, foreign body removal,

simple burn cleaning, abscess drainage, local anesthetic infiltration and other minor interventions.
Recommended [N_2O] ~ 30 - 50% for mild to moderate pain, while for severe pain [N2O] up to 70%. Always co-administer with O_2 and [O_2] at least 30%. After N_2O withdrawal, oxygen is administered with a non-rebreathing O_2 mask for at least 5 min to avoid diffusion hypoxemia. Because of its low solubility in blood (blood gas partition coefficient 0.47) and almost no binding to plasma proteins, N_2O has a short onset of action, a maximum effect in 3 - 5 min and a rapid recovery, which is not masking the clinical picture.
In addition to the usual side effects (nausea, vomiting, dizziness, headache, euphoria, excitation) the most serious, but rare, are non-specific and related to sedation: aspiration, airway obstruction, hypoxemia, hallucinations or even failure of sedation. It is contraindicated in all pathological conditions associated with the existence of air cavities (ileus, pneumothorax, cystic fibrosis of the lung, pneumocephalus, etc.) as N_2O causes expansion of structures containing air, in intracranial pathology due to an increase in cerebral blood flow and intracranial pressure and attention is required in cardiovascular problems. Contraindicated in the first and second trimester of pregnancy. Although N_2O may be an option for managing interventions that cause pain, discomfort or anxiety and require only very short-term sedation in the ED, it is not an innocent option, as it is associated with occupational and environmental risks.
Inhalation of N_2O, even in limited exposure (up to 8 hours), leads to irreversible inactivation of vitamin B12, which, in chronic exposure, entails hematological problems, bone marrow suppression and CNS toxicity with ataxia, polyneuropathies and even psychosis. Also, prolonged exposure of healthcare professionals to N_2O is associated with an increased number of spontaneous abortions, fertility problems, chromosomal changes and inherited birth defects. At the same time, the risk of abuse should not be overlooked. The recommended exposure limits (REL) should not exceed 25ppm for an 8-hour weighted limit. The gas removal system and the ventilation system are factors that reduce the emitted N_2O within the business area.
The uncontrolled release of N_2O used in healthcare facilities also has a negative impact on the environment. N_2O belongs to the powerful gases of the greenhouse effect and contributes to the increase of the average temperature of the planet's surface. Based on the measure of comparing the power of various greenhouse gases to trap heat in the atmosphere compared to that of CO_2 (Global Warming Potential - GWP), N_2O is 298 times more powerful than CO_2. Anesthetic gases make up 2.5% of greenhouse gas emissions and the largest volume is that of N_2O. N_2O released as an anesthetic contributes 0.1% to the greenhouse effect and its lifetime in the atmosphere is approximately 114 years. In addition, it also contributes to the reduction of ozone concentration in the stratosphere (place where ozone - O_3 - absorbs part of the ultraviolet radiation), a phenomenon known as the ozone hole. The relative rate of depletion of the ozone layer that N_2O can cause (Ozone Depletion Potential - ODP) under current atmospheric conditions is estimated to be 0.017. As the effect of a gaseous agent on climate change is a result of its global warming potential GWP or ozone depletion potential ODP in relation to atmospheric levels of that agent, it becomes clear that the variable term in this relationship is atmospheric levels, which we all have a duty to keep down. Search for alternatives such as Xenon (an anesthetic gas with analgesic properties and cardiovascular stability without a harmful effect on the development of brain neurons) or incorporation of N_2O collection and degradation systems into the necessary

equipment seem that are gaining ground. The administration of N_2O gas, if this is an option, must be done with its simultaneous abduction and decomposition and at the same time, with a central destruction unit to neutralize any N_2O residue, preventing its release into the atmosphere.

Therefore, answering the question of whether N_2O has a place in the management of acute pain in ED, the answer is that *it can be an option for painlessly carrying out specific interventions in children in ED, but only under strict conditions to ensure the protection of health professionals from the continuous exposure and with all necessary environmental protection measures.*

References:

- *Mark Gillman. Mini-Review: A Brief History of Nitrous Oxide (N_2O) Use in Neuropsychiatry. Current Drug Research Reviews, 2019*
- *SM Brown, JR Sneyd. Nitrous oxide in modern anaesthetic practice. BJA Education, 2016*
- *Daniel E Becker, Morton Rosenberg. Nitrous oxide and the inhalation anesthetics. Anesth. Prog. 2008*
- *Robert D. Sanders et al. Biologic Effects of Nitrous Oxide. Anesthesiology, 2008*
- *Judith L Zier, Meixia Liu. Safety of high-concentration nitrous oxide by nasal mask for pediatric procedural sedation: experience with 7802 cases. Clinical Trial. Pediatr Emerg Care. 2011*
- *Christine Huang, Nathaniel Johnson. Nitrous Oxide, From the Operating Room to the Emergency Department. Curr Emerg Hosp Med Rep 2016*
- *J. Mcglothlin, J. E. Moenning. Waste Anesthetic Gases (WAGs) among Employees in the Healthcare Industry. Clinical Foundations. 2013*
- *Marta Keller et al. Occupational Exposure to Halogenated Anaesthetic Gases in Hospitals: A Systematic Review of Methods and Techniques to Assess Air Concentration Levels. Int J Environ Res Public Health. 2023*
- *Nishkarsh Gupta et al. Current status of nitrous oxide use in pediatric patients. World J Clin Pediatr. 2022*
- *M.P. Sulbaek Andersen et al. Inhalation anaesthetics and climate change. British Journal of Anaesthesia. 2010*
- *Hina Gadani, Arun Vyas. Anesthetic gases and global warming: Potentials, prevention and future of anesthesia Anesth Essays Res. 2011*
- *R W Portmann et al. Stratospheric ozone depletion due to nitrous oxide: influences of other gases. Philosophical Transactions Of the Royal Society B. 2012*

RECOGNIZING THE LIMITS: CARE AND DECISIONS NEAR THE END OF LIFE

Eirini Papageorgiou
Msc Anesthesiologist-Intensivist,Director of SSY,ICU-Pain and Palliative Care Clinic,ATH Theageneio

End of life care (EOL = end of life care) can last from a few days, months or even a year before the patient's death (in the literature, a period of up to 2 years is mentioned). In addition to patients whose death is imminent, this category also includes patients who

• They have fragile health, with many comorbidities

• They are at risk of death, due to a sudden deterioration of a pre-existing health condition

• Are in a life-threatening situation due to a catastrophic event (traffic accident, stroke)

• Have an advanced terminal illness (cancer, dementia, motor neuron disease)

EOL is only one part of palliative care and begins weeks, months or even 1 year before the imminent death and should last up to a year after, supporting the bereaved relatives.

Why is ethics important in care? Because there is an obvious dependence and significant asymmetry between caregiver and recipient, where often the one receiving care experiences either reduced or no autonomy, as for example those in deep depression. In such cases the foundation of care is respect. And before proceeding with any medical operation or procedure it is essential to ensure that the patient "has a voice" and it is heard, recognizing their own unique way of being in life. Moreover, it is essential to know that death is not simply the end of life but the most representative evidence of human existence and by embracing mortality, you recognize it as an inherent element of life rather than its end.

In 2011, guidelines were published by NICE which were updated in 2021 for EOL (and which are consistent with earlier guidelines in the UK as a result of a collaboration of 21 national organisations). Of course, these recommendations concern states with organized state benefits for palliative care and include:

• Identification of patients at the end of life

• Assessment of holistic needs, issues of equality and multiculturalism

• Carer support

• Providing information

• Redefining treatment

• Advance care planning

• Reassessment of needs

• Communication and information flow between services

• Interdisciplinary support

• Transfer of patients to care structures

• Out of hours patient care

Understanding of the principles of biomedical ethics (Autonomy, Beneficence, Non-Harm, Justice) is necessary for doctors and patients to resolve all these ethical dilemmas that arise at the end of life and are common in Western and Eastern cultures but the use and their severity may vary.

At the EOL the decision to incorporate practices to prolong life or palliate a patient is difficult for both the physician and the patient and family members. The most difficult decisions we are asked to make concern the following:

1. **Cardiopulmonary resuscitation (CPR)**. Its use is not always appropriate for dying patients. The decision to perform CPR is based on many factors, such as patient preference, estimated failure rate, risks of process and the benefit received. Caution is required if there are disagreements between patient and family about DNR.
2. **Mechanical ventilation (MV)**, **extracorporeal membrane oxygenation (ECMO), mechanical circulatory support (MCS)**. All three are supportive interventions. The principle of autonomy is decisive in the decision to stop them. The time of discontinuation is decided by family members and support is terminated when it no longer provides benefit to the patient, the outcome is not optimal and the quality of life is not acceptable, according to the wishes of the patient and his family.
3. **Sedation at the end of life**. Its aim is to keep the patient in a state of "unconsciousness" in order to reduce persistent physical and psychological stress. The theory of double effect and the principles of proportionality and autonomy hold key roles in the practice of palliative sedation. It is necessary to assess symptoms and maintain proportionality between therapeutic effect and infusion dose. In practice, opioids are used in combination with benzodiazepines, titrated to sedation doses.
4. **Withholding or withdrawing treatments**.
5. **Euthanasia and assisted suicide (PAS)**.
6. **Nutrition and hydration**. Nutrition and hydration are considered a medical treatment/intervention and remain an unresolved issue in patients at the end of life, always respecting the principles of bioethics. Regarding nutrition and hydration, there is a lack of high-quality studies, but it is recommended that decisions be made on a case-by-case basis, involving a multidisciplinary team

with experience in providing d/e. As the end of life approaches, priority must be given to quality of life over nutritional intake, but also to the support of caregivers.

The key points of EOL are summarized as follows:
• The main goal of EOL is to prevent or alleviate “suffering”, respecting the wishes of the dying patient. Physicians face many ethical challenges at the EOL.
• As the decisions made affect patients, carers and society it is important to protect the rights, dignity and vitality of all involved.
• Open communication with sensitivity and empathy, shared decision-making and basing them on bioethical principles would help many ethical dilemmas at the EOL.

Bibliography:

1. Melahat Akdeniz et al. Ethical considerations at the end of life care. SAGE Open Medicine. Volume 9:1-9, 2021
2. Naveen Salins et al. Definition of Terms Used in Limitation of Treatment and Providing Palliative Care at the End of Life: The Indian Council of Medical Research Commission Report. Indian Journal of Critical Care Medicine Volume 22 Issue 4 April 2018

THE SUPPORT OF THE PATIENT'S CAREGIVER

Dr. Bülent Kiamiloglou
Anesthesiologist Chief of the Department of Anesthesiology & Pain Clinic
(General Hospital of Komotini, Greece)

"Care is the special interest, special attention, concern of someone or something. Care is solicitude, worry, nursing, vigilance"

According to the definition of the European Directive, a carer is any worker who provides personal care or support to a relative or person living in the same household as the worker and who is in need of significant care or support for a serious medical reason.

Care should be provided with respect for human dignity and with the aim of improving the patient's quality of life. Any deficiency or loss of physical or mental function does not change human nature, which should be respected.

Types of caregivers: (a) Professional carers (b) Informal or family carers.

Caregivers' "duties" are to provide assistance to patients in their daily activities, from the simplest to the most complex.

The attitude of caregivers is influenced by a variety of factors, including: economic status, culture, severity of illness, educational level, and supportive environment.

Caring for a person with health problems is a difficult and demanding process.

Most caregivers will need help and support at some point. The term 'burden' has become prevalent internationally to describe the burden placed on carers, particularly informal carers, who face social, psychological and financial problems.

The state, society and the family environment should provide all possible support and assistance to caregivers, so that they do not reach a burnout.

Law 4808/2021 established several rights for caregivers, while recognizing their role in the community. However, other measures will have to be taken also.

In conclusion, the "State of Welfare" should develop, through social services, Training and Information educational programmes for Caregivers, even in the most remote – secluded regions of Greece, to enhance their difficult task and support them psychologically as well as financially.

THE NURSE AS A CAREGIVER

Anastasopoulou Eirini
RN, MSc, PhD(c), Anesthesiology Department, GONK "Agioi Anargyroi", Adult Educator, Deputy Coordinator of Palliative and Supportive Care Education, Secretary of the Department of Nursing Anesthesiology NANG(ESNE-NATIONAL ASSOCIATION OF NURSES OF GREECE)

The pain experienced by the patient imposes a heavy burden on the individual and its effective management requires a team approach, consisting of nurses, doctors and other health care personnel. Nurses are members of this multidisciplinary team and play an important role in pain management in terms of early identification of difficulties that can be caused by patients' pain beliefs and in designing nursing care appropriately measured to patients' pain beliefs. In particular, nurses have the responsibility of identifying and assessing patients' pain beliefs, evaluating the effects of these beliefs on treatment methods and choosing an appropriate treatment method for each patient. In this context, nurses should guide the patient to cope with pain, using pharmacological and non-pharmacological methods of pain treatment, monitoring the results of treatment and developing empathy. As nurses spend more time with patients with pain, they are able and indeed better placed to observe and evaluate the patient more accuratelyn(Eti Aslan & Badır, 2005; Kocaman, 1994).

Carlson (2010) reported that the nurses most likely to adopt good practice in treating pain were those who had read more professional journals or had previously used evidence-based guidelines and had a greater desire for career advancement or a higher level of education. The attitudes of nurses towards pain affect its assessment and management. The type of surgery, the age, the sex of the patient, the characteristics of his personality, his social status, the previous use of which, influenced the crisis of nurses in the management of analgesia (Baird and Haslam, 2013**)**. It is recommended that self-reporting of patients' pain be of primary importance, but this was not demonstrated in the way nurses assessed pain in practice and this was directly dependent on the nurse's previous experience in the care of surgical patients, how much analgesia the patient had received intraoperatively, the sociocultural characteristics of the patients, the patients' requests for pain relief and the non-verbal signs (vital signs) that were often more believed than self-reporting (Jang et al., 2020, Chatchumni et al., 2016a).

When comparing pain assessments from nurses and patients, it emerged that nurses consistently underestimated pain compared to their patients. Nurses administered pain relief based on their patient's pain score rather than the patient's self-report.

Pain assessments were collected from the patient but did not form the basis for decisions about pain management. Nurses sometimes found it difficult to put aside their personal

biases about believing in the patient (feeling that the patient was looking for drugs or the pain they reported was not what was expected with this surgery) when providing pain management for the patient (Cousins et al., 2022).
Experience, education, professional commitment, attitudes towards pain and opioids and prejudices in relation to age, gender, race, and patient culture influenced nurses' pain management practice.

Low levels of nursing knowledge about pain management suggest the need to introduce algology into the content of undergraduate nursing studies and lifelong professional training and specialization depending on the nurse's field of work.

Targeted educational interventions and nurse motivation in attending graduate programs of algology, palliative and palliative care can improve nurses' knowledge of pain management and quality care.

More studies are needed to investigate the impact of cultural traits (both nurse and patient) on the assessment and management of pain, and especially intervention studies that use innovative educational approaches that change attitudes and prejudices and improve clinical nursing practice.

INEQUALITIES AND CULTURAL INFLUENCES IN PAIN MANAGEMENT

Martina Rekatsina
MSc, PhD, FFPMRCA, EDPM, Assistant Professor of Anaesthesiology and Pain Management, Athens, Greece
Moka Eleni, MD, PhD, Consultant Anaesthesiologist, Heraklion, Crete, Greece

The perception and treatment of pain are significantly influenced by inequalities and cultural impacts. “The Lancet” journal notably refers to the "abyss of access" in palliative care, emphasizing the urgent need to achieve universal healthcare coverage.

Diversity, inclusion, equity, and a sense of belonging are fundamental concepts that must be understood in the context of combating inequalities. Diversity describes the differences among individuals and groups, focusing on the various characteristics within a population. Inclusion refers to how well the presence, views, and contributions of different people are valued and integrated into any environment. Equity ensures that everyone has fair access to resources or services, tailored to their needs, while belonging refers to a state where individuals feel safe and valued within a community.

In all aspects of pain management, we encounter inequalities related to the experience of pain; differences in pain perception and reporting across various demographic groups, pain assessment, access to care (particularly for marginalized groups), and pain treatment. Recognized factors contributing to these differences include patient-related factors, healthcare provider-related factors, and systemic factors. Poor communication between patients and healthcare providers plays a particularly decisive role. Factors that may affect pain treatment include a lack of quality information, low health literacy, biases based on racial and socioeconomic differences, language barriers, cultural differences, and reduced access to appropriate pain management and palliative care services. In this context, specific groups face even stronger barriers. For example, women from minority backgrounds experience significant disparities in the provision of regional anaesthesia during childbirth/C-section, while the LGBTQ population reports increased pain but also delays or avoidance of seeking help due to fear of discrimination and prejudice.

Cultural background also greatly influences pain expression, coping strategies, and expectations regarding pain management. According to the literature, specific cultural norms and beliefs can affect the interaction between patients and healthcare providers, potentially leading to misunderstandings and inadequate treatment.

Strategies to combat these disparities include proper training and understanding of cultural differences regarding pain perception and treatment by healthcare providers, addressing systemic bias through policies ensuring fair access to pain management services, enhancing communication by overcoming language barriers (using interpreters

and culturally appropriate communication strategies), and implementing inclusive practices. This requires creation of an environment where diversity is valued, and everyone could receive appropriate care. Improvements and standardization of pain assessment guidelines and protocols, shared decision-making between healthcare providers and patients, investment in research, and the adoption of policies and joint strategies promoting optimal access and care in pain management will all contribute to this goal. Promoting equality in pain treatment and palliative care demands a human-centered approach, community support, and changes at multiple levels: individual, interpersonal, organizational, and at the level of policy making.

The concepts of Inclusion, Diversity, Equity, and Justice in our field are the cornerstone of optimal and quality daily practice, ensuring fair, holistic, and personalized care for our patients

References

1. Knaul FM, Farmer PE, Krakauer EL, et al. Lancet. 2018;391(10128):1391-1454.
2. Estime SR, et al. International Anaesthesiol Clin, 2021; 59: 81 – 85
3. Toledo P. Anesth Analg, 2022; 134: 1164 – 1165
4. Nwokolo OO, et al. Anesth Analg, 2022; 134: 1166 – 1174
5. Lingras KA, et al. ASA Monitor, 2023; 87: 15 – 16
6. Anderson KO, et al. J Pain, 2009; 10: 1187 – 1204
7. Meints SM, et al. Pain Manag, 2019; 9: 317 – 334
8. Nguyen LH, et al. Anesthesiology Clin, 2023; 41: 421 – 488
9. Abd-Elsayed et al. J Pain Res. 2021;14:3623-3625.
10. Obedin-Maliver J, et al. JAMA. 2011;306(9):971-977.
11. Memtsoudis SG, et al. Anesthesiology, 2016; 124: 608 – 623
12. Myhre JM, et al. Anesthesiology, 2019; 130: 864 – 866
13. Morden NE, et al. N Engl J Med, 2021; 385: 342 – 351
14. Zhong H, et al. J Clin Anaesthesiol, 2021; 75: 110440
15. Diallo MS, et al. Anesth Analg, 2022; 134: 1175 – 1184
16. Schaar AN, et al. Reg Anesth Pain Med, 2023
17. EAPC Atlas of Palliative Care in Europe, London 2020
18. Worldwide Hospice Palliative Care Alliance 2021. Equity in Access to Palliative Care Report 2021
19. Wong C, et al. Br J Anaesth, 2020; 124: e40 – e58
20. Gouger GH, et al. Curr Opin Anaesthesiol, 2022; 35: 201 – 207
21. Chiem J, et al. Curr Opin Anaesthesiol, 2022; 35: 208 – 214
22. Nwokolo OO, et al. Anesth Analg, 2022; 134: 1166 – 1174

“DON'T SHOOT THE SECOND ARROW”. PAIN IS INEVITABLE, BUT SUFFERING IS NOT

Vasileia Nyktari
Assistant Prof in Anesthesiology School of Medicine, University of Crete

Introduction

Understanding pain and "suffering" is essential for engaging in meaningful discussions with patients and providing tailored solutions. Definitions are vital as they encompass scientific, ontological, and practical aspects.

The contemporary perception of pain within evidence-based medicine has its roots in the Cartesian era. Traditional medicine has historically viewed pain from a naturalistic standpoint, considering individuals as consisting of two distinct entities: the body and the mind. This dualistic view establishes a clear separation between the mind and body, suggesting their fundamental natural disparity. Within this framework, pain is construed as a bodily phenomenon, describable in terms of observable, physical, and quantifiable damage. René Descartes' concept of "res extensa" assumes a world organized according to specific natural laws in an era marked by the growing importance of the natural sciences. Through the application of scientific methodology, it is posited that it is feasible to restore a human body in a manner akin to the repair of a machine.

Descartes expressed a profound confidence in human reason, envisioning a future in which medical advancements would mitigate the burden of illness and the frailty associated with aging. This perspective mirrors a philosophical disposition that emerged during the Enlightenment but waned in the twentieth century as the perils of scientific and technological interventions became increasingly apparent. Although this mechanistic approach has led to significant successes in pain management, it has yet to provide solutions to more complex phenomena such as chronic pain and non-physical pain.

The concept of psychosomatic beings, located within a social and cultural context, offers an alternative perspective to the traditional body/mind dichotomy. It acknowledges that pain and suffering entail physical, psychological, and socio-cultural dimensions. We now understand that pain, like pleasure, results from somatosensory perception. This perception is then transmitted to the brain as a mental image and is accompanied by an unpleasant feeling and changes in the body. Such a process cannot be fully explained by biology and neurology alone. Cognitive awareness, interpretation, behavioral dispositions, and cultural factors influence pain perception.

The understanding of "suffering" warrants further exploration. The concept of "suffering" plays a central role in pain literature. While there is considerable focus on

fundamental pain models and clinical research and practices designed to alleviate pain-related suffering, it is essential to note that the term 'suffering' lacks a precise definition, and research dedicated to this specific aspect remains underdeveloped. For instance, within Loeser's "onion skin" model of pain, suffering is arguably the least elaborated of the four key components. This presents a somewhat paradoxical scenario: the concept of suffering plays a central role in pain research and practice, yet it remains vaguely defined and underdeveloped.

Of particular concern is that pain-related suffering is often overlooked, misunderstood, and undertreated by health professionals or even amplified when the person experiencing pain is stigmatized or disbelieved. The elevated incidence of suicide among individuals enduring persistent pain serves as a grave indicator that concerted measures are imperative to alleviate pain-related suffering.

Cassell has made a significant contribution to pain and its associated suffering, substantially advancing our comprehension of human distress and sparking a movement focused on humanizing clinical care. "Suffering" is defined as an unpleasant or agonizing experience that profoundly affects an individual on psychological and existential levels. Even without identifiable biological or quantifiable causative factors, such as those associated with physical tissue damage, suffering presents as an embodied experience, eliciting physiological responses. Despite not originating from illness or pain, suffering can induce feelings of unwellness and may even precipitate illness.

Cassell's extensive work on pain and suffering has influenced pain research. For example, the landmark paper on "suffering" published in the New England Journal of Medicine in 1982 has received more than 4700 citations. In the article, Cassell states, "The patient suffers when he perceives an impending destruction of himself. He continues to suffer until that threat passes or until the person's integrity is restored in some other way." Cassell further elaborates that suffering requires self-reflection and the ability to construct a personal narrative. In order to experience suffering, an individual must have an awareness of their past, the present situation, and the potential impact on the future. Therefore, patients experience pain and suffer it based on this personal narrative, a construction of thoughts and consciousness. It is logical to think that we are returning to the first doctrine of Cartesian philosophy, "cogito, ergo sum", usually translated as "I think, therefore I am".

Beyond “Cartesian Reason”

The impact of Cartesian logic is clearly discernible in the advancement of neuroscience, which has facilitated our ability to engage with the quantifiable physical underpinnings of consciousness. Initially, two distinct measurable attributes were identified: wakefulness, denoting the state of being awake, and awareness, which encompasses

the content of consciousness. Recent progress in neuroimaging has demonstrated that the brain performs these two functions in separate regions.

"Awareness" refers to a subjective, first-person experience involving thoughts, perceptions, and emotions, and is primarily assessed through a directive carried out at the patient's bedside. Awareness can be divided into two distinct elements: “internal awareness” includes mental imagery, inner speech, or mind wandering that is detached from environmental stimuli, while “external awareness” pertains to the perception of sensory stimuli.

In the state of "awake awareness," an individual is fully alert and conscious. However, it is important to note that this does not universally apply. While most conscious experiences occur during wakefulness, heightened levels of inner awareness can also occur during other states, such as sleep and vivid dreams.

Following extensive scientific research, further facets of consciousness have been identified beyond awareness and alertness, including responsiveness and connectedness. Responsiveness pertains to behavioral interactions with the external environment, while excluding reflexive behavior.

Classic near-death experiences (NDEs) can be understood as states of heightened internal awareness coupled with a disconnection from the environment, providing a unique opportunity to investigate disconnected consciousness in humans. Near-death like experiences refer to a more heterogeneous group of situations that vary primarily in levels of alertness and connectivity, which are usually higher than classic NDEs. Hypnosis, mindfulness, the use of psychedelic drugs, high-fidelity virtual reality, and meditation can help achieve states of consciousness with heightened inner awareness and different levels of responsiveness, alertness, and connectivity. These techniques can be used therapeutically to alter the internal narrative that leads to 'suffering'.

Finally, the next step after questioning the mind/body dualism is to revise the concepts of pain and suffering. Simply put, it is no longer acceptable to consider pain only in biological terms and suffering only in psychological terms. "Although pain and pain-related suffering are unpleasant, they are not inherently constructive or destructive forces that contribute to the building up or tearing down of the self." Instead, it is an integral part of a person's life, and the self is shaped by a variety of experiences, including pain and suffering, which have an existential dimension. Embracing this shift in thinking will allow us to progress further towards humanizing medical care.

References

1. Bueno-Gómez N. Conceptualizing suffering and pain. Philos Ethics Humanit Med. 2017 Sep 29;12(1):7. doi: 10.1186/s13010-017-0049-5. PMID: 28958214; PMCID: PMC5621131.

2. Stilwell P, Hudon A, Meldrum K, Pagé MG, Wideman TH. What is Pain-Related Suffering? Conceptual Critiques, Key Attributes, and Outstanding Questions. J Pain. 2022 May;23(5):729-738. doi: 10.1016/j.jpain.2021.11.005. Epub 2021 Nov 28. PMID: 34852304.
3. Zhao T, Zhu Y, Tang H, Xie R, Zhu J, Zhang JH. Consciousness: New Concepts and Neural Networks. Front Cell Neurosci. 2019 Jul 9;13:302. doi: 10.3389/fncel.2019.00302. PMID: 31338025; PMCID: PMC6629860.
4. Martial C, Cassol H, Laureys S, Gosseries O. Near-Death Experience as a Probe to Explore (Disconnected) Consciousness. Trends Cogn Sci. 2020 Mar;24(3):173-183. doi: 10.1016/j.tics.2019.12.010. Epub 2020 Jan 22. PMID: 31982302.
5. Sanders RD, Tononi G, Laureys S, Sleigh JW. Unresponsiveness ≠ unconsciousness. Anesthesiology. 2012 Apr;116(4):946-59. doi: 10.1097/ALN.0b013e318249d0a7. PMID: 22314293; PMCID: PMC3311716.

CHRONIC PAIN AFTER PERIOPERATIVE NERVE INJURY

Chrisseida Magklari
MD, MSc, Anesthesiologist, Senior Consultant, Anticancer Oncology Hospital of Athens "Agios Savvas"

Chronic Postsurgical Pain (CPSP) was standardized in 2019 when included in the International Classification of Diseases ICD-11 and is defined as:
Pain which develops or increases in intensity after a surgical procedure or a tissue injury, persists beyond the healing process or more than 3 months after the triggering event, is localized either at the surgical/area of injury, or projected onto the innervation area of a nerve in this area, or related to a dermatome or Head's zone and often has characteristics of neuropathic pain.
Chronic post-surgical pain (CPSP) is one of the most frequent complications after surgery, with an important negative impact on patients' quality of life that constitutes significant economic and healthcare burdens. The median incidence of chronic pain at 6–12 months after surgery is 20–30% with a slight decrease over time. The incidence can differ depending on the type of surgery. For example, studies have reported incidence ranging from 50%-85% following limb amputation, 11%-57% following mastectomy, 30%-55% after cardiac surgery, 5%-65% after thoracotomy, and 5%-63% following hernia repair, as the amount of injury to the tissues or nerves and the degree of inflammation differ by operation type and procedure of the surgery. The wide variability in the reported incidence (5–85%) is largely attributable to methodological differences caused by different methods of data collection and variable definitions of CPSP.
Specific risk factors for the development of chronic postoperative pain have now been identified, which relate to the patient, such as age, comorbidities and psychological factors, the existence of chronic pain preoperatively and the control of pain in the perioperative period, the type of surgery and the anesthetic technique, where the use of regional techniques to prevent CPSP is suggested.
However, while these techniques are recommended for the prevention of postoperative pain, they may also cause neurological damage, which is classified as transient neuropraxia, axonotmesis, and neurotmesis. The incidence of peripheral nerve injury or post-block neurological dysfunction (PBND) is around 2–4/10 000 (0.02–0.04%). The overall incidence of PBND decreases over time, differs for individual PNB with the highest incidence noted for interscalene block followed by axillary brachial plexus block and the use of US guidance has been associated with a lower incidence. Evidence strongly suggests that the use of a regional anesthetic technique (neuraxial, peripheral, or combined) does not inherently increase the risk for neurologic injury when compared with general anesthesia alone.
Similar to anesthesia-related injuries, the vast majority of neural injuries associated with surgical procedures are transient, yet the long-term injuries most often result from a short list of perioperative causes such as direct nerve trauma, positioning, stretch, retraction, or compression from hematoma or dressings.
The treatment of chronic postoperative pain is based on pharmacological (analgesics, antiepileptics, antidepressants, local anesthetics) and non-pharmacological (physical therapy, neurostimulation, cognitive psychotherapy), but also interventional treatments

(blockade of the stellate ganglion, paraspinal and intercostal nerve blocks, pulsed radio frequencies neurolysis).

Refernces:

1. Chronic post-surgical pain – update on incidence, risk factors and preventive treatment options, D.C. Rosenberger & E.M. Pogatzki-Zahn, *BJA Educ.,* 2022
2. Factors Associated With Risk of Neurologic Complications After Peripheral Nerve Blocks:A Systematic Review, R. V. Sondekoppam, & B. C. H. Tsui, *Anesthesia & Analgesia*, 2017
3. Neurological injury following peripheral nerve blocks: a narrative review of estimates of risks and the influence of ultrasound guidance, Lemke, Johnston, Behrens, Seering, McConnell, Singh, Sondekoppam, *Reg. Anesth. Pain Med.*, 2023
4. A Review on the Management of Peripheral Neuropathic Pain Following Breast Cancer, Avila, Torres-Guzman, Maita, Garcia, De Sario, Borna, Ho, Forte, *Breast Cancer: Targets and Therapy*, 2023
5. Management of neuropathic pain induced by surgery: Review of the literature by a group of experts specialized in pain management, anesthesia and surgery, Prudhomme, Legras, Delorme, Lansaman, Lanteri-Minet, Medioni, Navez, Perrot, Pickering, Serrie, Viel, *Journal of Visceral Surgery*, 2020
6. The Second ASRA Practice Advisory on Neurologic Complications Associated With Regional Anesthesia and Pain Medicine, Executive Summary 2015, *Reg. Anesth. Pain Med.*, 2015
7. Chronic postsurgical pain: current evidence for prevention and management, Thapa & Euasobhon, *Korean J. Pain*, 2018
8. Chronic postsurgical pain: A European survey, Martinez, Lehman, Lavand'homme, Harkouk, Kalso, Pogatzki-Zahn, Komann, Meissner, Weinmann, Fletcher, *Eur. J. Anaesthesiol.*, 2024
9. Management of postsurgical pain in the community, MacPherson, Pattullo, *Aust. Prescr.*, 2020

CHEMOTHERAPY INDUCED PERIPHERAL NEUROPATHY

Chloropoulou Panagiota
Anesthesiologist, Director of the NHS, Anesthesiology Department & Pain Clinic, General Hospital of Kavala

Peripheral neuropathy is an adverse effect of chemotherapy that occurs in up to 40% of cancer patients, 30% of whom still have symptoms 1 year after the end of the chemotherapy regimens.

It is the most common side effect of chemotherapy, second after hematological toxicity. The clinical manifestations mainly include sensory disturbances, with parts of extremities affected symmetrically in a "glove-sock" type distribution. Symptomatology includes dysaesthesia, allodynia, paresthesias as well as motor disorders. It is mainly caused by treatment with platinum analogues, taxanes, alkaloids, thalidomide, but also biological agents such as bortezomib. The variety of the clinical picture is attributed to the structural and pharmacodynamic differences of chemotherapeutic agents.

The recognition of PN after chemotherapy is a major problem. The assessment of the situation of the patient is essential to estimate the prevalence and incidence of the syndrome. The use of specific diagnostic tools such as the EORTC-CIPN 20 should be established as an important means of diagnostic approach and recording of the syndrome with accuracy and reliability aiming to personalize the treatment, both preventively and therapeuticly.

The biggest problem exists in the diagnosis of the syndrome. The exact diagnosis of the patient is of major importance in assessing prevalence and incidence. The medical community, must reach an agreement regarding assessment and diagnosis, with use of tools such as the EORTC-CIPN 20. The detailed recording of the syndrome allows the way to a precise pharmaceutical approach reaching personalized treatment. Regarding preventive treatments, the literature is incomplete.Medication regimes are expanding to include off-label drugs and alternative ways of coping.

Pharmaceutical options to treat it include drugs from different categories such as antiepileptics, tricyclic antidepressants (TCAs), selective serotonin and norepinephrine reuptake inhibitors (SSRIs and SNRIs), opioid analgesics and local anesthetics. Of all the categories above the only drug that is considered to have proven effectiveness is duloxetine and is the only one recommended in the ASCO (American Society of Clinical Oncology) recommendations for the treatment of CIPN. Nevertheless, ASCO itself argues in its guidelines that, due to the extent of this phenomenon among cancer patients and limited therapeutic options, the administration of drugs in the aforementioned categories, with less proven effectiveness, is not discouraged.

Due to the expected increase in the incidence of CIPN in the coming years, its early and timely treatment is crucial.

CHRONIC PAIN AFTER INFECTION WITH COVID-19

Chronic Post-COVID Pain(CPCoP)

Chaftoura Evangelia-Ioanna
Anaesthesiologist, General Hospital of VOLOS "ACHILLOPOULEIO"

According to recent publications, 65 million people around the world suffer from long-COVID. These constitute 10% of the more than 651 million certified COVID-19 patients (a conservative estimate) worldwide.
One year after infection, 1 in 10 patients have symptoms of long Covid and only 1 in 4 consider themselves fully recovered. NICE 2020
According to the world's two major health organizations, the World Health Organization (WHO 2021) and the International Institute for Health Improvement (NICE 2021), the term ¨Long Covid¨ is usually used to describe symptoms and signs that developed during or after Covid-19 infection, persisted for more than 12 weeks and are not explained by an alternative diagnosis.
Researchers at the University of Washington linked many diseases to the long-term complications of Covid-19. Most systems and organs of the body may be affected, with the most common symptoms being fatigue, shortness of breath, cognitive impairment, myalgia, muscle weakness, persistent headaches, depression, chest pain, arthralgia and restlessness.
Chronic post-Covid pain is a new-onset pain. Pre-existing chronic MSD can act as a trigger for its occurrence to a significant degree.
It may be part of Neuro-PACS (Neurological post -COVID 19 sdr) and is characterized by manifestations/symptoms affecting the CNS and PNS. A 12% of patients meet the criteria for diagnosing PD, through the PainDETECT questionnaire.
The types of chronic pain after COVID-19 infection are pain after prolonged hospitalization or after ICU hospitalization, pain associated with post-infection rehabilitation, and central and peripheral NP after Covid-19 infection. Patients with CPCoP are presented a combination of different types of pain, nociceptive, neuropathic, algoplastic. Differential diagnosis of pain is important in choosing appropriate and personalized treatment for these patients. Well-documented studies suggest that chronic pain after Covid-19 disease is mostly algoplastic and characterized by an exaggerated pain response associated with CNS-derived symptoms such as insomnia, psychological and mood disorders.The pattern of algoplastic pain is established on the basis of a prolonged systemic inflammatory response, which in turn initiates a central sensitization process that is amplified and prolonged in time by a series of negative psychological factors that contribute to the chronicity of pain. Possible pathophysiological mechanisms of chronic MSK pain after Covid-19 infection are considered

1) the prolonged inflammatory reaction, caused by the virus in combination with the pro-inflammatory cytokines-cytokine storm and the hyperreactivity of immune cells (autoimmune type reaction)

2) the direct invasion of the virus into the cells of the CNS and the nervous system through the receptor of the angiotensin converting enzyme (ACE2)

3) viral-induced hypersensitivity of neurons in the peripheral and central nervous system leading to MSK algoplastic pain

4) psychological factors that were present or were a result of Long Covid

5) injuries to shoulders, hips, knees, cervical and lumbar region of the SC, peripheral nerves such as ulnar, radial, femoral after medical interventions and prolonged immobilization. In addition, prolonged bed rest is accompanied by muscle atrophy and weakness.

There are radiological findings of autoimmune myositis, according to some researchers, as well as case reports, describing symptoms of myositis and rhabdomyolysis as late complications or symptoms of long covid.

The pathophysiology of neuropathic pain after COVID-19 infection is not clear. Probably are responsible

1) generalized systemic infection, due to immune dysregulation

2) injury to neurons, leading to demyelination

3) vascular dysfunction, leading to clots or microhemorrhages in the brain.

4) prone position in ICU patients, who were treated with ARDS (neuropathy of the ulnar, radius, fibula due to compression)

5) prolonged hospitalization+_ ICU, leads to axial sensorimotor peripheral neuropathy (severe neuropathy)

6) neurotoxic drug-related (hydroxychloroquine, linezolid, cisatracurium, clindamycin, glucocorticoids)

Small fiber neuropathy is the most common, with no alternative etiology.
In addition to chronic fatigue and myalgic encephalomyelitis, another multisystemic, neuroimmunological disorder may precede it.

Post-COVID headache

Duration >3 months after acute infection.
The most common neurological symptom accompanying Covid-19, along with dizziness.
It is caused by virus-related mediators and cytokines.
It is possible

a) the nerve endings of the trigeminal nerve in the nasal cavity to be directly affected by the virus

b) vasoconstriction and oxidative stress, due to endothelial damage
c) the cytokine storm to be the cause.
d) there is hematogenous dispersion and retrograde neuraxial transport.

Unilateral, of new-onset or worsening of pre-existing primary headache; onset during acute infection or later and may be accompanied by anosmia. Tension-type or migraine-type headache is resistant to analgesics. Assessment by a neurologist is required!
There are no guidelines.
Antiepileptics, steroids, breathing exercises are suggested to manage it.

Post Covid Chest pain

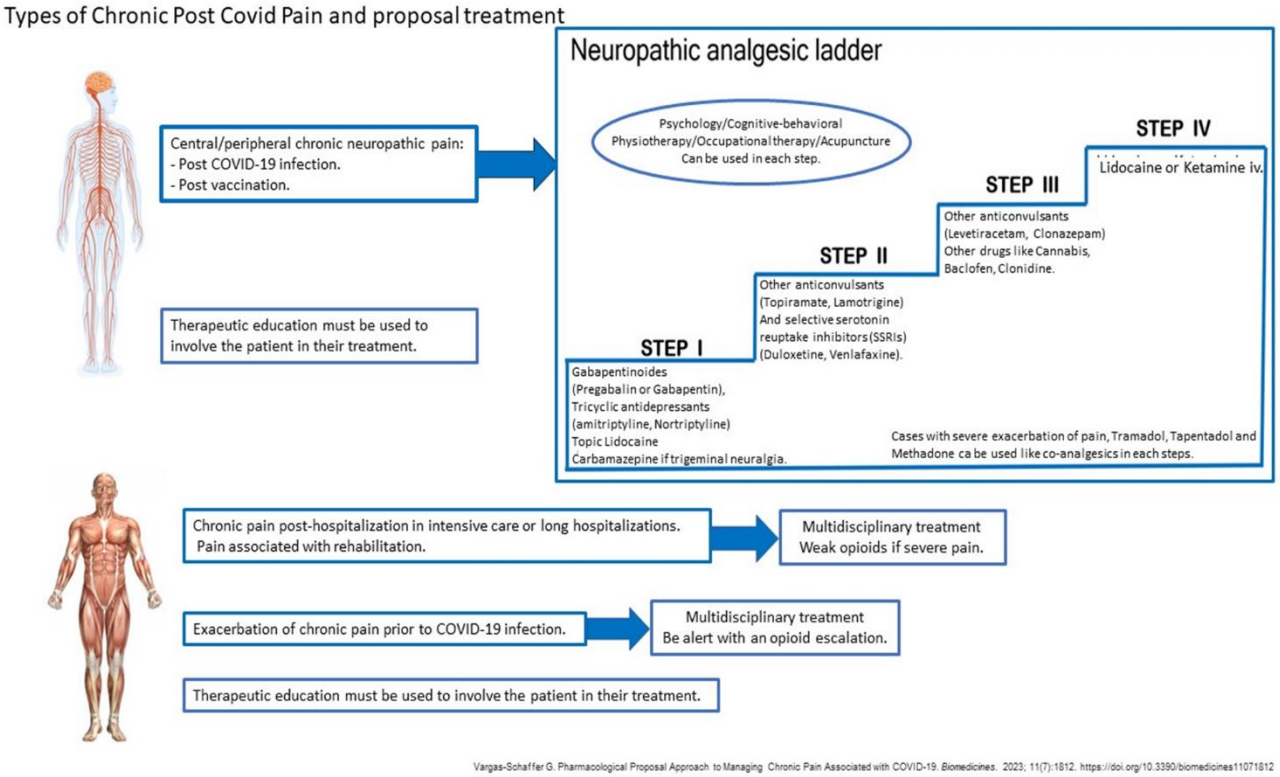
It is defined as intermittent pain, difficult to manage because of its non-periodicity, resistant to treatment. It may be accompanied by other Long-Covid symptoms, such as shallow breathing, tachycardia.
One study showed no association between the severity of Covid-19 infection and myocardial damage. Possible association with high ACE2 expression in myocardial cells or pulmonary embolism as a possible cause.
Attention to the presence of other underlying disorders, such as pericarditis.

Persistent testicular pain

Rare post-infectious complication.
High concentrations of ACE2 are implicated. The virus enters in testicular cells by binding to ACE2 receptors, causing inflammation and tissue damage.
Another study reports that orchitis is caused by vasculitis in context of coagulation disorders. Recommended use of ice to reduce swelling, paracetamol, ibuprofen.

TREATMENT OF CHRONIC PAIN AFTER COVID-19 INFECTION

There are no randomized, controlled clinical trials evaluating the effectiveness of different treatments in the treatment of chronic pain after covid-19 infection
A suggested way of managing it is shown in the figure below.



- NSAIDS and topical steroids are used for joint pain with satisfactory results.

- The usefulness of physiotherapy for muscle and joint pain is well documented according to a recent review.

- Opioids should be administered carefully and in small doses in patients with low immunity. Preferably tramadol, buprenorphine, oxycodone (minimal immunosuppressive effect), as the effect of opioids on the immune system has not been well characterized, but has been associated with infections. Alternatively, non-opioid strategies are recommended (e.g. use of clonidine, ketamine)

- The use of minimally invasive techniques (that exclude corticosteroids - immunosuppressive effect), such as neurolysis, Platelet Rich Plasma, TA without cortisone, is recommended.

- A recent cohort study involving the use of low-dose naltrexone (LDN) showed promising results in reducing symptoms of pain after COVID-19 infection and other related symptoms. Statistically significant results in terms of pain relief, increased energy and capability of concentration and decrease of insomnia.

- Numerous case reports support the use of Stellate Ganglion Block in the treatment of Long Covid symptoms such as brain fog, anosmia, loss of taste, fatigue, (which remind the response of the autonomic N.S. to pro-inflammatory cytokines), as well as pain. SGB attenuates chronic sympathetic hyperreactivity, improving cerebral and peripheral blood flow and returning

the ANS to its pre-Covid homeostasis. The magnitude of the benefit is not related to the duration of action of TA(duration much longer than that of SGB).

- It also allows the reorganization and self-regulation of the neuro-immune system.

- Early recognition of the presence of depression, anxiety and other psychiatric symptoms is important as well as distinguishing whether these are a consequence of the physical symptoms or a primary consequence of SARS-CoV-2 infection.

- Neuropsychological assessment to determine the need for specialised psychological support.

- Palmitoylethanolamide (PEA) a natural, endogenous fatty acid amide with anti-inflammatory, antioxidant, analgesic, antimicrobial, neuroprotective and analgesic activity is suggested for nonciceptive pain. Documentation of its use is limited, there are only case series supporting its use in chronic pain after Covid-19 disease.

- Non-invasive Vagus Nerve Stimulation (VNS) is a promising technique for chronic pain after Covid infection. Its stimulation results to modification of the immune system response to Covid-19 and control of infection.

- Non-pharmacological interventions such as acupuncture, music therapy, distraction, relaxation are used, but have low levels of evidence.

- Various exercise programs, including yoga, help to improve coordination, moderate decrease of pain and a small functional recovery of the patient.

- Cognitive Behavioral Therapy involves the use of breathing techniques and training in Mindfulness in the management of anxiety and depression.

- PATIENTS WITH CHRONIC PAIN AFTER TREATMENT WITH COVID-19 ARE IN NEED OF SPECIALISED, MULTIDISCIPLINARY CARE AND ACCESS TO REHABILITATION PROGRAMMES.

BIBLIOGRAPHY

1.Long COVID: major findings, mechanisms and recommendations DAVIS h.e. et al. Nat.Rev.Microbiol.2023,21,133-146
2.COVID-19 rapid guideline: managing COVID-19
NICE guideline [NG191]Published: 23 March 2021 Last updated: 08 May 2024

3.More than 50 long-term effects of COVID-19: a systematic review and meta-analysis Sandra Lopez-Leon, et al Scientif Records 2021
4. Does COVID19 activates previous chronic pain? A case series Reza Alizadeh, Ziba Aghsaeifard Ann Med Surg(Lond).2020 Dec 31;61:169-171
5.Pain paths among post-COVID-19 condition subjects: a prospective cross-sectional study with in-person evaluation Gabriel T Kubota 1 2, Felipe H C Soares 1, Eur J Pain 2023,27,636-650. Aghaeifard Ann.Med.Surg.2021,61, 169-171
6. pharmacological proposal approach to managing chronic pain associated with COVID-19 Grisell Vargas-Schaffer Biomedicines 2023, 11(7), 18126
7.Neuropathic Pain in the General Population: A Systematic Review of Epidemiological Studies.Van Hecke, O.; Austin, S.K.; Khan, R.A.; Smith, B.Torrance,N.Pain 2014, 155, 654-662.
8.Prevalence of Neuropathic Component in Post-COVID Pain Symptoms in Previously Hospitalized COVID-19 Survivors.Herrero-Montes, M.; Fernández-De-Las-Peñas, C.; Fer
9.Long COVID: rheumatologic/musculoskeletal symptoms in hospitalized COVID-19 survivors at 3 and 6 months Fatih Karaarslan Klin Rheumatol. 2022 Jan;41(1):289-296.
10. myalgia as a symptom at hospital admission by severe acute respiratory syndrome coronavirus 2 infection is associated with persistent musculoskeletal pain as long-term post-COVID sequelae: a case-control study Fernández-de-las-Peñas,et al PAIN 162(12):p 2832-2840, December 2021.
11.Clinical Characteristics and Mechanisms of Musculoskeletal Pain in Long COVID Omar Khoja,et al J Pain Res. 2022; 15: 1729-1748.

12.The long-term health outcomes, pathophysiological mechanisms and multidisciplinary management of long COVID Jingwei Li et.al Signal Transduction and Targeted Therapy volume 8, Article number: 416 (2023)
13. Pain Symptoms in Patients with Coronavirus Disease (COVID-19): A Literature Review Lin-Man Weng et al J Pain Res2021 Jan 26:14:147-159
14.Review Long COVID: major findings, mechanisms and recommendations Hannah E. Davis,et al Nature Reviews Microbiology volume 21, pages133-146 (2023)
15.Peripheral Neuropathy Evaluations of Patients With Prolonged Long COVID
Anne Louise Oaklander, MD, PhD et al Neyrology, Neuroimunology and Neuroinflammation May 2022 issue
16.Covid-19 pandemic: a neurological perspective.Durjoy Lahiri , Alfredo A. Cureus.2020:12(4).
17. Headache characteristics in COVID-19 pandemic-a survey study Özge Uygun The Journal of Headache and Pain October 2020.
18.Outcomes of Cardiovascular Magnetic Resonance Imaging in Patients Recently Recovered From Coronavirus Disease 2019 (COVID-19) Valentina O Puntmann 1, M Ludovica Carerj 1 2, et al
19.Role of angiotensin-converting enzyme 2 (ACE2) in COVID-19 Wentao Ni 1, Xiuwen Yang 2 et al. Crit Care.2020:24(1):1-10.
20.Testicular pain as an unusual presentation of COVID-19: a brief review of SARS-CoV-2 and the testis La Marka A. et al Reprod Biomed Online.2020;41(5): 903-6.
21.Arthralgia: a map of Cochrane evidence relevant to rehabilitation for people with post COVID-19 condition Cordani C. et al Eur. J. Phys. Rhehabil. Med. 2022,58,870-874
22. Physiotherapy in physical sequelae of SARS-CoV-2 infection: a case report Sarita Santos, Juan A. Flores Physiotherapy Research International 19 January 2022

23.Pain in Covid Era Heloísa Alonso-Matielo et al Frontiers in Physiology (IF 4) Pub Date: 2021-01-11
24.COVID-19: Pain Management in Patients with SARS-CoV-2 Infection-Molecular Mechanisms, Challenges, and Perspectives Sylwester Drożdżal et al Brain Sci. 2020, 10(7), 465
25.Stellate Ganglion Block Relieves Long COVID-19 Symptoms in 86% of Patients: a Retrospective Cohort Study Lisa Pearson et al Cureu. 2023 Sep; 15(9): e45161.
26.Palmitoylethanolamide (PEA) Inhibits SARS-CoV-2 Entry by Interacting with S Protein and ACE-2 Receptor Rossella Fonnesu et al Viruses 2022, 14(5), 1080;
27.The Use of Palmitoylethanolamide in the Treatment of Long COVID: A Real-Life Retrospective Cohort Study by Loredana Raciti et Med. Sci. 2022, 10(3), 37
28.Transcutaneous auricular vagus nerve stimulation effects on inflammatory markers and clinical evolution of patients with COVID-19: a pilot randomized clinical trial Laura Uehara Expert Review of Medical Devices Volume 19, 2022 - Issue 11
29.Interventions for palliative symptom control in COVID-19 patients Marike Andreas et al Cochrane Database Syst. Rev.2021,8.
30.Chronic Musculoskeletal Pain: Nonpharmacologic, Noninvasive Treatments Flynn DM. Am. Fam. Physician 2020:Oct 15:102(8):465-477

SACROCOCCYGEAL EPIDURAL INJECTION: CAN YOU USE IT IN CLINICAL PRACTICE? IS THERE ANY EVIDENCE?

Irene Kouroukli

MD PhD FIPP ,HIPPOCRATIO GENERAL HOSPITAL OF ATHENS

HISTORICAL REVIEW

- 1901: lumbar sciatica cocaine through sacrococcygeal access
- 1920-1940:N/S and local anaetshetic in large volumes
- 1952: corticosteroids for lumbar radicular pain
- North American Spine Society
- Agency for Healthcare Research and Quality
    - ❖ Epidural steroid injections:non-surgical treatment in low back pain in lumbar spine

Epidural Steroid Injection for lumbar sciatica (ESI)

- ESI :Controversies
- ESI: Increase of applying the technique
- United States, a total of 2,032,959 epidural corticosteroid injections were performed in 2016, representing an increase of 8.6% compared with 2009. (*Eur Spine J 2021)*

Possible mechanism of lumbar sciatica

- Pain is due to :
    - Inflammation of nerve root with or without mechanical irritation
- Mechanical pressure of nerve roots:
    - Motor deficits and sensory disturbances (not necessarily pain)
- Inflammation in epidural space and nerve roots (intervertabral disc herniation) ⇨pain
- Inflammation of nerve root in epidural space :
    - Leakage of disc material
    - Compression of vascular network of nerve root
    - Irritation of dorsal root ganglion (spinal stenosis) (MEDSCAPE 2023)

Inflammation-Steroids

- Stimulation of the anti-inflammatory process (between intervertebral disc herniation and anterior epidural space)
- Inhibition of expression of pro-inflammatory cytokines
- Inhibition of PLA2 and inflammation
- Inhibition of transmission in C-fibers

  Reduction of capillary permeability

  Other possible mechanism of pain reduction
- Washout and removal of inflammatory citokynes
- Adhesionlysis
- Suppression of ectopic discharges (DRG,nerve roots)
- Restoration of blood flow to ischemic nerve roots

Epidural Space approaches

- Interlaminar
- Transforaminal
- Parasaggital
- Sacrococcygeal

Sacrococcygeal approach

- Needle insertion through the sacral hiatus
- Administration of therapeutic solution in epidural space
- Technique without fluoroscopy: 68% failure

Sacrococcygeal approach

- Safe
- Point of entry
  - Away from dura (3-8cm)
  - Intact from previous operations in spine
- Far from the possible target
- Large volume are required through the needle

Sacrococcygeal access through Racz catheter

- Using special catheter (Racz)
- Target disc herniation, adhesions

- Smaller volumes
- Greater concentration of steroids at the target
- Safer for the use particulate steroids:rich venous network, absence of rhizomedullary arteries
- Indicated for damage at multiple levels of spine

Indications ESI-Sacrococcygeal approach

- Radical pain in spine
- Treatment of neurogenic claudication due to spinal stenosis
- Chronic low back pain
- Chronic postoperative pain in the lower back (neuroplasty)

ESI-Effectiveness

- Without fluoroscopy and contrast: 68% failure
- Fluoroscopy improves effectiveness and minimizes potential complications (intravenous infusion)
- Prospective study 191 pts transforaminal in one level : epidural and intravenous infusion found 8.9%⇨live fluoroscopy
- Blood aspiration 44.4% : false negative results (*Medscape 2023*
- *Spine J 2007)*

  Ultrasound-ESI

- Sacrococcygeal :
  - Immediate confirmation of needle position
  - Identification of vessels ,sacrococcygeal ligament,sacral hiatus
  - Accidental intravascular injection :Color doppler
- Disadvantage: inability to detect solution expansion level

  Systematic review of the effectiveness of caudal epidural steroid injections in the treatment of chronic low back or radicular pain

- Efficacy and safety of sacrococcygeal injections with or without catheter using imaging (fluoroscopy-u/s)
- Primary aim pain reduction>50%
- Secondary aims :Functional improvement >50%, reduction of analgesics ,patient satisfaction

- Chronic low back pain
- Radical pain
- Chronic postoperative low back pain >3 months (*Interventional Pain Medicine 2022)*

Results

- Caudal epidural neuroplasty
- Placing catheter for 2 days :effective for 3,6,12 months
- Lumbosacral rhizopathy due to intervertebral disc herniation and CPSBP(Chronic Postsurgical Back Pain)
- Level of evidence moderate
- Sacrococcygeal injections to treat pain and dysfunction in patients with
- Spinal stenosis and neurogenic claudication ,discogenic chronic low back pain and chronic low back pain without intervertebral disc herniation and radiculitis
- Level of evidence low
- Potential benefit

Conclusions

- More research is needed to establish the utility of sacrococcygeal injections /neuroplasty in the treatment of painful conditions of lumbosacral region
- Research should focus on :
- Accurate diagnosis
- Optimal time frame for the inervention
- Site of injection the therapeutic solution
- Type and volume of therapeutic solution
- Use or not of a catheter
- Catheter dwell time

A Comparative Systematic Review and Meta- Analysis of 3 Routes of Administration of Epidural Injections in Lumbar Disc Herniation

- All injections were performed fluoroscopically
- Follow up for at least 6 months

- RCTs with placebo or active controlled
- Transforaminal –interlaminar –sacrococcygeal
- Prespecified outcome: Pain relief and functional improvement >50% (*Pain Physician 2021 Review –Metanalysis)*

Ending up

- Significant pain relief and functional improvement at 6 and 12 months for all three accesses
- Transforaminal and interlaminar LA + steroids level of evidence 1
- LA level of evidence II
- Sacrococcygeal : level of evidence II LA+steroids / LA

Systematic review of caudal epidural injections in the management of chronic low back pain.

- Caudal epidural steroid injections included 11 randomized trials and 5 non randomized studies.
- Conclusions:
- Lumbar disk herniation and radiculitis
- *The efficacy is good* for short- and long-term relief of chronic pain with LA+ steroids (evidence II)
- Fair with LA only.
- In managing chronic axial or diskogenic pain, spinal stenosis, and postsurgery syndrome, the indicated evidence is fair. (Pain Physician 2009)

Epidural steroid compared to placebo injection in sciatica:a systematic review and meta-analysis

- VAS ⇩ $p<0.001$
- 6 weeks moderate evidence vs placebo
- 3 months low evidence vs placebo
- 6 months low evidence (fluroscopic guidance ,(sub)acute symptoms)
- NSAIDS +morphine reductions 6 weeks
- Sacroccygeal and transforaminal >>> interlaminal : greater relief for sciatica

- Greater benefit for patients with confirmed intervertebral disc herniation with imaging vs without imaging
- The most frequent side effects were minor and transient (*European Spine Journal 2021 review)*

Despite the lack of absolute agreement regarding the effectiveness of the technique in the literature ,it has been established as the minimally invasive technique for treating sciatica with a progressively rate of application to patients

Efficacy of Percutaneous Adhesiolysis in Managing Low Back and Lower Extremity Pain: A Systematic Review and Meta-analysis of Randomized Controlled Trials: Manchikanti L et all.

- Percutaneous adhesionlysis for low back and lower extremity pain (713 pts)
- 9 studies (177 initial record)
- Pain :secondary to postsurgery syndrome, central spinal stenosis, and chronic disc herniation (Pain Ther 2023)
- showing improvement in pain and function>50%
- as well as a decrease in opioid consumption
- up to 1 year (follow up)
- showed level I–II or strong to moderate evidence 9 RCTs with moderate to strong strength of recommendation

Other indications of sacrococcygeal injections

In addition, uncontrolled and anecdotal case reports show that caudal epidural steroid injection is effective for management of pain related to pelvis, rectum, and perineum. (*Korean J Pain 2022; 35(1): 106-113)*

- Coccycodynia
- Chronic pain due to anal fissure
- Interstitial cystitis /Chronic bladder syndrome (*Korean J Pain 2022; 35(1): 106-113*

Medicine (2023) 102:37 ,Indian Journal of Urology, Jul-Sep 2014, Vol 30, Issue 3

The effect of Caudal Epidural Injection on healing
in the treatment of chronic anal fissure

- RCT

- 120 patient
- Two groups (60)
- Caudal epidural bupivacaine 0.25% 10 cc (group A) three sessions one per week
- Topical treatment and peros medical treatment for two weeks (group B)
- Group A
- VAS ⇩ p 0.002
- Improvement of quality of life SF36 ⇧ p0.003
- 2 weeks follow up .(*Medicine (2023) 102:37)*

CONCLUSIONS

- There is a place in our clinical practice for sacrococcygeal epidural injections with imaging
- More research is needed to understand its usefulness ,exact indications ,therapeutic regimen and duration of treatment
- Management of pain syndromes in the lumbosacral spine :moderate to strong evidence
- Chronic pelvic pain ,perineum not yet documented

UNRAVELLING EPIGENETIC MECHANISMS OF CHRONIC PAIN

Karakosta Agathi
Assistant Professor of Anaesthesiology ,Faculty of Medicine, University of Ioannina, Greece

Epigenetic mechanisms are processes that regulate gene expression and thus induce changes in phenotypes without altering the DNA sequence itself. It is a field of study that originates from developmental and cancer biology, while in neuroscience, it is a new area of research.

DNA sequences are coiled around histone molecules, and together with them, as well as with non-histone proteins, form a complex three-dimensional architecture of chromatin that composes the chromosomes inside the nuclei. During this process, the DNA can be modified in several ways. These are epigenetic processes, which involve three main mechanisms (1) DNA methylation, (2) histone modifications, and (3) the action of non-coding RNAs (ncRNA). These modifications determine the degree to which the DNA is coiled, and the transcription factors that are recruited, thus determining which of the genes are translated at any given time. Specifically, for DNA methylation & histone modifications, these are stable modifications that are heritable in dividing cells.

In general, epigenetic modifications are highly cell-type specific. Epigenetics is crucial for normal development. Indeed, a well-controlled global DNA demethylation occurs early in development, during which pluripotent genes are expressed. When DNA is re-methylated, epigenetic modifications control the expression of developmental genes and ultimately lead to cell differentiation and determination of the cell's fate. Any disturbance in this process results in very serious conditions such as the Rhett syndrome, the Angelman syndrome and the Prader-Willi syndrome.

Methylation is a fundamental biochemical process that involves the addition of a methyl group to various molecules, with DNA methylation being the most well-known form of methylation and crucial in the regulation of gene expression and epigenetics. DNA methylation usually involves cytosine bases (carbon-5 of cytosine / 5mC), particularly where cytosine is followed by guanine (forming a CpG site). In mammals, these reactions are catalyzed by de novo DNA methyltransferases 3a and 3b (DNMT3a/3b) and maintained by DNMT1. The complementary mechanism of methylation is demethylation, which is catalyzed by ten-eleven translocation dioxygenases (TET 1-3). These enzymes actively oxidize 5-methylcytosine (5mC) to 5-hydroxymethylcytosine (5hmC). DNA methylation achieves long-term stable silencing of genes by inhibiting the binding of transcription factors or other regulatory proteins to DNA.

Histone modification and chromatin remodelling are changes that occur at the nucleosome level. The terminal portion of histones protrudes from the nucleosome and is the site where post-transcriptional modifications, such as acetylation and methylation, occur. Preclinical studies have shown that acetylation and methylation of the promoter regions of the genes encoding the μ-receptor, Nav1.8 and Kv4.3 can either reduce or induce hyperalgesia.

Non-coding RNAs (ncRNAs) include small ncRNAs such as microRNAs (miRNAs) and long ncRNAs (lncRNAs). Their main function is to regulate gene expression at transcriptional and translational levels, and their expression is affected by environmental or external stimuli, confirming the concept of epigenetic regulation independent of DNA sequences. Recent studies have found that the expression of lncRNAs is dysregulated in various models of chronic pain, including neuropathic pain, inflammatory pain, and cancer pain. Dysregulated lncRNAs in turn seem to activate microRNAs, inflammatory cytokines, etc., mechanisms that are known to play a key role in chronic pain development.

As for epigenome variations, in the rare cases that they occur, they occur in regions that matter, regions that have a regulatory role, such as the transcriptional start site (promoter) and the enhancer region. These variations seem to increase over time. In these regulatory regions, DNA methylation varies between individuals and between conditions. These variations are being studied in chronic pain conditions.

In conclusion, both epigenetics and chronic pain are fields of research that are still in their infancy. However, emerging evidence supports that pain perception is influenced by our epigenome, and that chronic pain can change our epigenome. Epigenetics may confer increased vulnerability to pain. Chronic pain induces stable and long-lasting changes in epigenetic markers. These markers can be both therapeutic targets as well as prognostic markers, although these findings should be investigated in large-scale studies.

References

1. Giordano R, Kjær-Staal Petersen K, Arendt-Nielsen L. The link between epigenetics, pain sensitivity and chronic pain. Scand J Pain. 2022 Sep 26;22(4):664-666. doi: 10.1515/sjpain-2022-0086. PMID: 36149940.
2. Ghosh K, Pan HL. Epigenetic Mechanisms of Neural Plasticity in Chronic Neuropathic Pain. ACS Chem Neurosci. 2022 Feb 16;13(4):432-441. doi: 10.1021/acschemneuro.1c00841. Epub 2022 Feb 2. PMID: 35107991.
3. Mauceri D. Role of Epigenetic Mechanisms in Chronic Pain. Cells. 2022 Aug 22;11(16):2613. doi: 10.3390/cells11162613. PMID: 36010687; PMCID: PMC9406853.
4. Géranton SM, Tochiki KK. Regulation of gene expression and pain states by epigenetic mechanisms. Prog Mol Biol Transl Sci. 2015;131:147-83. doi: 10.1016/bs.pmbts.2014.11.012. Epub 2015 Feb 15. PMID: 25744673.
5. Doehring A, Geisslinger G, Lötsch J. Epigenetics in pain and analgesia: an imminent research field. Eur J Pain. 2011 Jan;15(1):11-6. doi: 10.1016/j.ejpain.2010.06.004. Epub 2010 Jul 2. PMID: 20584621.
6. Buchheit T, Van de Ven T, Shaw A. Epigenetics and the transition from acute to chronic pain. Pain Med. 2012 Nov;13(11):1474-90. doi: 10.1111/j.1526-4637.2012.01488.x. Epub 2012 Sep 14. PMID: 22978429; PMCID: PMC3501579.
7. Rodrigues D, Monteiro C, Cardoso-Cruz H, Galhardo V. Altered Brain Expression of DNA Methylation and Hydroxymethylation Epigenetic Enzymes in a Rat Model of Neuropathic Pain. Int J Mol Sci. 2023 Apr 15;24(8):7305. doi: 10.3390/ijms24087305. PMID: 37108466; PMCID: PMC10138521.
8. Price AJ, Collado-Torres L, Ivanov NA, Xia W, Burke EE, Shin JH, Tao R, Ma L, Jia Y, Hyde TM, Kleinman JE, Weinberger DR, Jaffe AE. Divergent neuronal DNA methylation patterns across human cortical development reveal critical periods and a unique role

of CpH methylation. Genome Biol. 2019 Sep 26;20(1):196. doi: 10.1186/s13059-019-1805-1. PMID: 31554518; PMCID: PMC6761727.
9. Bai G, Ross H, Zhang Y, Lee K, Ro JY. The Role of DNA Methylation in Transcriptional Regulation of Pro-Nociceptive Genes in Rat Trigeminal Ganglia. Epigenet Insights. 2020 Sep 10;13:2516865720938677. doi: 10.1177/2516865720938677. PMID: 32974606; PMCID: PMC7495519
10. Liang L, Lutz BM, Bekker A, Tao YX. Epigenetic regulation of chronic pain. Epigenomics. 2015;7(2):235-45. doi: 10.2217/epi.14.75. PMID: 25942533; PMCID: PMC4422180.
11. Li Z, Li X, Jian W, Xue Q, Liu Z. Roles of Long Non-coding RNAs in the Development of Chronic Pain. Front Mol Neurosci. 2021 Nov 23;14:760964. doi: 10.3389/fnmol.2021.760964. PMID: 34887726; PMCID: PMC8649923.
12. Polli A, Godderis L, Ghosh M, Ickmans K, Nijs J. Epigenetic and miRNA Expression Changes in People with Pain: A Systematic Review. J Pain. 2020 Jul-Aug;21(7-8):763-780. doi: 10.1016/j.jpain.2019.12.002. Epub 2019 Dec 16. PMID: 31837447.

PAIN IN CANCER SURVIVORS: A GROWING CHALLENGE

Sofia Poulopoulou
Anesthesiologist, Director of the Anesthesiology Department, Head of the Pain Clinic, General Anticancer Oncology Hospital of Athens Agios Savvas

Until recently, the prevailing view was that a cancer diagnosis was considered a death sentence. However, nowadays, thanks to the remarkable scientific achievements, cancer is widely recognized as a disease for which the majority of patients receive treatment, resulting in long-term symptom-free survival. This improvement in survival rates has led the medical community to adopt the term “cancer survivor” and abandon the former “cancer victim”.

The term was actually established in 1985 by Dr. Fitzhugh Mullan, who himself was diagnosed with cancer at a young age and then wrote articles and books, describing his experience and his struggle for survival, both physical and mental, in order to cope with the upheavals that both the disease itself and the treatment brought to his life.

There is no consensus on the definition of the term so far. According to the European Organisation of Research and Treatment of Cancer (EORTC), a survivor is "anyone diagnosed with cancer, who has completed their initial treatment (excluding maintenance therapy), and has no evidence of active disease". For the National Cancer Institute (NCI), a survivor is a patient from the moment of diagnosis to the end of life, which seems to be the most prevalent.

In the US, in 2022 more than 18 million citizens lived with a history of cancer, compared to 2.7 million in Europe in 2020. These numbers are projected to increase by 25% in 2035.

Approximately 47% of cancer survivors report pain after completing their treatment and after at least 3 months have elapsed. At the same time, pain is among the first 3 symptoms out of a total of 67, which worsen their quality of life.

Pain may be due either to tumor and/or metastasis or to antineoplastic therapy (surgery, chemotherapy, radiation therapy, immunotherapy) or to pre-existing comorbidities.

The following most common syndromes due to antineoplastic therapy will be described:

- Chronic postoperative pain
- Chemotherapy induced peripheral neuropathy
- Radiation-induced neuropathy
- Aromatase inhibitor–induced arthralgia
- Painful musculoskeletal adverse reactions after immunotherapy
- Musculoskeletal pain after breast surgery

References

1. Bell K, Ristovski-Slijepcevic S. Cancer survivorship: why labels matter. J Clin Oncol. 2013 Feb 1;31(4):409-11.
2. Mullan F. Seasons of survival: reflections of a physician with cancer. N Engl J Med. 1985 Jul 25;313(4):270-3.
3. https://health.ec.europa.eu/system/files/2022-02/ eu_cancer-plan_en_0.pdf
4. Siegel RL, Miller KD, Wagle NS, Jemal A. Cancer statistics, 2023. CA Cancer J Clin. 2023 Jan;73(1):17-48.
5. Haenen V, Evenepoel M, De Baerdemaecker T et al. Pain prevalence and characteristics in survivors of solid cancers: a systematic review and meta-analysis. Support Care Cancer. 2022 Dec 27;31(1):85.
6. Shi Q, Smith TG, Michonski JD et al. Symptom burden in cancer survivors 1 year after diagnosis: a report from the American Cancer Society's Studies of Cancer Survivors. Cancer. 2011 Jun 15;117(12):2779-90.
7. Brown M, Farquhar-Smith P. Pain in cancer survivors; filling in the gaps. Br J Anaesth. 2017 Oct 1;119(4):723-736.
8. Jordan B, Margulies A, Cardoso F et al. Systemic anticancer therapy-induced peripheral and central neurotoxicity: ESMO-EONS-EANO Clinical Practice Guidelines for diagnosis, prevention, treatment and follow-up. Ann Oncol. 2020 Oct;31(10):1306-1319.
9. Martinez V, Lehman T, Lavand'homme P et al. Chronic postsurgical pain: A European survey. Eur J Anaesthesiol. 2024 May 1;41(5):351-362.
10. Kim S, Chen N, Reid P. Current and future advances in practice: aromatase inhibitor-induced arthralgia. Rheumatol Adv Pract. 2024 Apr 10;8(2): rkae024.
11. Haanen J, Obeid M, Spain L et al. Management of toxicities from immunotherapy: ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up. Ann Oncol. 2022 Dec;33(12):1217-1238.

IN ANTISEPSIS AND INFECTIONS

Papastratigakis George
Anesthesiologist, Department of Anesthesiology, University Hospital Heraklion

Antisepsis and infection prevention are of utmost importance for invasive analgesic techniques because of the significant risks of infection associated with these procedures. The recommendations drawn from the guidelines and proposals of various scientific societies, emphasize the importance of diligent preparation of health care providers with hand hygiene and the use of sterile personal protective equipment, as parts of a comprehensive antiseptic technique. Patient preparation also plays an important role with smoking cessation and preoperative treatment of infections and eradication of colonization, especially prior to device implantation. Detailed protocols for the prevention and management of infections are described in literature, advocating conservative and individualized treatment where possible, and removal of infected implanted materials where appropriate. Universal recommendations for the use of sterile gloves, the controversial use of sterile surgical gowns, and the necessity of surgical mask use, are emphasized by existing guidelines. Despite the lack of centralized and clear guidelines specific to patients with chronic pain, health care providers can draw safe conclusions from existing regional anaesthesia and surgical antisepsis guidelines. Continuous training in antiseptic techniques is essential, to minimize the risk of infections and ensure patient safety when performing invasive analgesic techniques.

TRANSLATIONAL SERVICES FOR SUBACUTE PAIN

Pelagia-Paraskevi Chloropoulou
MD, PhD Associate Professor in Anesthesiology School of Medicine, Democritus University of Thrace, Greece

Chronic postoperative pain (CPSP), the prevalence of which ranges between 5-85%, represents one of the main causes of long term dependency of surgical patients on opioid medications.

In 2014 in Toronto General Hospital a Transitional Service for Subacute Pain (TSSP) was developed for the first time, aiming to an improved management of pre-operative, intra-operative and acute post-operative pain with reasonable use of opioids, in order to mitigate chronic post-operative pain.

This multi-scientific service has three main purposes:

- The timely identification of patients who are in danger of developing chronic postoperative pain (CPSP) and their improved treatment.
- The identification of vulnerable patients in high danger for opioid abuse development.
- The improved post-operative functionality of patients.

The usual fragmentation of the treatment of post-operative pain by surgeons, anesthesiologists, pain nurses or other primary health providers, is replaced by the TSSP, which continues to provide care for these patients up to six months after their discharge from hospital. The TSSB thus tries to apply a more correct pharmaceutical, psychological and supplementary treatment aiming at filling more effectively the gap between the pre-operative, the inpatient and the out of hospital care of patients who have been submitted to a surgical procedure. In such way the TSSP reduces the post-operative amount of opioid use, improves the weaning of patients from opioids, reduces the rate of chronic post-operative pain and improves the long term functionality of the patients.

Important future steps would be to further define the effectiveness of the TSSP, the cost-effect ratio and the further expansion of the service for the benefit of the patients.

THE ENDOCANNABINOID SYSTEM AND PAIN

Georgios Stefanakis
Anaesthetist University Hospital of Heraklion, Crete, Greece

The endocannabinoid system, which acts at almost every level of the nociceptive pathway (from the peripheral nerves up to the brain), consists of endocannabinoids and their transport proteins, receptors and synthesis and degradation enzymes. The main endocannabinoids are anandamide (AEA) and 2-arachidonoylglycerol (2-AG), although other substances are currently also classified as endocannabinoids. Endocannabinoids are produced by membrane phospholipids; they are derivatives of arachidonic acid post conjugation with either ethanolamine or glycerol. The main receptors are CB_1 and CB_2, however endocannabinoids also bind to other receptors, such as $TRPV_1$, PPAR, GPR18 and GPR55. In the brain, CB_1 receptors (a) inhibit ascending nociceptive transmission, mainly at the level of the thalamus, (b) modify the emotional component in the limbic system and cortex, and (c) activate descending inhibitory pathways in the periaqueductal gray matter and rostral ventral medulla. $TRPV_1$ receptors mediate pain transmission and therefore at high concentrations AEA can produce opposite effects from its action on $TRPV_1$ and CB_1 receptors. The main synthesis enzymes are N-acylphosphatidylethanolamine phospholipase D (NAPE-PLD) and diacylglycerol lipase α and β (DAGLα/β), and the main degradation enzymes are fatty acid amide hydrolase (FAAH) and monoacylglycerol lipase (MAGL). Metabolites of endocannabinoids from alternative pathways, such as cytochrome P450, lipoxygenase, or cyclooxygenase 2, may enhance or inhibit algesia.

The endocannabinoid system possesses many unique properties compared to other neurotransmitter systems, and these properties underlie its role in antinociception: (1) it includes two main types of receptors for several different ligands, (2) endocannabinoids are mainly synthesized on demand, following intense neuronal stimulation and (3) their action at synapses is retrograde. More specifically, stimulation of postsynaptic neurons induces the synthesis and release of endocannabinoids, which act on the receptors of presynaptic neurons, causing negative feedback. Depending on which neurons are affected, excitation or inhibition in the circuit is eventually suppressed.

Three main forms of endocannabinoid-induced synaptic plasticity have been described. Two of them involve short-term suppression of the depolarization- or metabotropic-induced inhibition or excitation. The third form of synaptic plasticity concerns long-term depression, homosynaptic or heterosynaptic, mainly in glutamatergic synapses. Endocannabinoids, particularly 2-AG, can also directly suppress neuronal excitability through a process called slow-self inhibition, which involves potassium channels.

The role of the endocannabinoid system in nociception has been established mainly in preclinical, animal models of pain, mainly inflammatory or neuropathic. In patients with osteoarthritis or rheumatoid arthritis, there is expression of cannabinoid receptors in chondrocytes and the subchondral zone and an increase in endocannabinoids, their receptors and FAAH in the synovial fluid. In osteoarthritis, 2-AG levels have been associated with pain intensity, depression, health-related quality of life, and visual memory. The endocannabinoid system is also involved in stress-induced analgesia (SIA) and hyperalgesia (SIH), interacts with the endogenous opioid system, and is involved in the analgesic action of certain agents, such as non-steroidal anti-inflammatory drugs, paracetamol and ketamine. Attempts to increase endocannabinoids by inhibiting hydrolytic enzymes for the purpose of antinociception, although successful at preclinical level, have failed in clinical trials due to adverse effects.

CANNABINOIDS: FACT OR FICTION?

Chryssoula Karanastasi
Anaesthesiologist, DEAA,Pain and Palliative Care Center, Henry Dunant Hospital Center, President Hellenic Medical Association for Cannabinoids

Interest in cannabinoids and their possible clinical applications was rekindled during the '80s with the discovery of dedicated receptors in mammals where chemicals from the *Cannabis sativa* L plant bind and exert a number of actions. Research and related findings have increased exponentially since, as do anecdotal reports and clinical studies on the function of the EndoCannabinoid System (ECS), endocannabinoids, phytocannabinoids and synthetic cannabinoids.

The need for managing difficult to treat conditions that affect people suffering from chronic diseases, self experimentation on behalf of the patients, the adaptation of a cannabis and cannabinoids related friendly approach by governments and the pharmaceutical industry demands, create an ever expanding field for clinical research, but also a number of controversies.

So is it a fact or fiction that phytocannabinoids can restore the actions of the main neuronal excitability regulator – and thus homeostasis, the ECS? Can we use cannabis to manage every symptom and any disease? And if not every single one of them, is it perhaps the key to managing intractable chronic pain? And if monotherapy is not the right approach, can we at least use cannabis to reduce opioid use (and avoid the famous opioid crisis from reaching Greece…) Does cannabis, apart from managing pain, manage cancer itself? Is it really that safe or is it wiser to recommend against its prescription in children (at least)? What if a patient using cannabis needs an anaesthetic, is there a risk and if so what kind of risk? Do we need more evidence or should we change our point of view?

What's the story with cannabis after all?

References

Sallaberry CA, Astern L. The endocannabinoid system, our universal regulator. JYI 2018, 34 (6): 48-55

Romero-Sandoval EA, Fincham JE, Kolano AL, Sharpe BN, Alvarado-Vázquez PA. Cannabis for Chronic Pain: Challenges and Considerations. Pharmacotherapy. 2018 Jun;38(6):651-662

Eisenberg E, Morlion B, Brill S, Häuser W. Medicinal cannabis for chronic pain: The bermuda triangle of low-quality studies, countless meta-analyses and conflicting recommendations. Eur J Pain. 2022 Jul;26(6):1183-1185

W. Häuser, DP. Finn, E. Kalso, N. Krcevski-Skvarc, HG. Kress, B. Morlion, S. Perrot, M. Schäfer, C. Wells, S. Brill: European Pain Federation (EFIC) position paper on appropriate use of cannabis - based medicines and medical cannabis for chronic pain management. Eur J Pain 2018;22:1547–1564

Bialas P, Fitzcharles MA, Klose P, Häuser W. Long-term observational studies with cannabis-based medicines for chronic non-cancer pain: A systematic review and meta-analysis of effectiveness and safety. Eur J Pain. 2022 Jul;26(6):1221-1233

Eisenberg, E. (2023). Is there an added value in more real-world cannabinoids studies? EJP, 27, 181– 182

https://www.eof.gr/c/document_library/get_file?uuid=0c6a14ba-9ac3-4c41-94c6-abb1c582e73d&groupId=12225

Ang SP, Sidharthan S, Lai W, Hussain N, Patel KV, Gulati A, Henry O, Kaye AD, Orhurhu V. Cannabinoids as a Potential Alternative to Opioids in the Management of Various Pain Subtypes: Benefits, Limitations, and Risks. Pain Ther. 2023 Apr;12(2):355-375.

Nielsen, S., Picco, L., Murnion, B. et al. Opioid-sparing effect of cannabinoids for analgesia: an updated systematic review and meta-analysis of preclinical and clinical studies. Neuropsychopharmacol. 47, 1315–1330 (2022).

Benedict G, Sabbagh A, Conermann T. Medical Cannabis Used as an Alternative Treatment for Chronic Pain Demonstrates Reduction in Chronic Opioid Use - A Prospective Study. Pain Physician. 2022 Jan;25(1):E113-E119. PMID: 35051158.

Dariš B, Tancer Verboten M, Knez Ž, Ferk P. Cannabinoids in cancer treatment: Therapeutic potential and legislation. Bosn J Basic Med Sci. 2019 Feb 12;19(1):14-23.

Woo JJ, van Reekum EA, Rosic T, Samaan Z. Children and Youth Who Use Cannabis for Pain Relief: Benefits, Risks, and Perceptions. Adolesc Health Med Ther. 2020 May 21;11:53-61

Shah S, Schwenk ES, Sondekoppam RV, Clarke H, Zakowski M, Rzasa-Lynn RS, Yeung B, Nicholson K, Schwartz G, Hooten WM, Wallace M, Viscusi ER, Narouze S. ASRA Pain Medicine consensus guidelines on the management of the perioperative patient on cannabis and cannabinoids. Reg Anesth Pain Med. 2023 Mar;48(3):97-117.

NON-PHARMACOLOGICAL STRATEGIES FOR MANAGING ACUTE PAIN IN THE EMERGENCY DEPARTMENT: THE ROLE OF ACUPUNCTURE

Emmanouela Koutoulaki
MD, PhD, FIPP, Director, Department of Anesthesiology & Pain Clinic, General Hospital of Athens "Ippokrateion"

Pain is the most common symptom presented by patients in the Emergency Department (ED), and effectively managing it poses a significant challenge. In clinical practice, pain assessment relies on self-reported pain scores from patients, making it difficult to establish treatment guidelines. Consequently, under-treatment and inadequate pain management remain major issues in the ED. Moreover, insufficient pain management increases the risk of developing chronic pain, exacerbating the pain epidemic in the United States.[1]

Until recently, pharmacological treatments were primarily used for pain management, often accompanied by various side effects and opioid misuse. From 2001 to 2010, opioid prescriptions in US EDs increased dramatically, with 50 times more medications prescribed than in the rest of the world, leading to a rise in overdose deaths and rendering it a public health issue.[2]

Based on the above, the American Academy of Emergency Medicine recommends that emergency physicians incorporate non-pharmacological strategies and opioid-free analgesia into their toolkit for patients with chronic and acute pain. Non-pharmacological interventions are effective and sufficient for pain management and are crucial for reducing opioid consumption in the ED, suggesting the need for further studies.[3]

The use of hot packs, osteopathy, physical therapy, acupuncture, music therapy, and other complementary therapies are among the non-pharmacological interventions recommended. Meta-analyses have shown that these approaches reduce pain compared to control groups.[4] Transcutaneous Electrical Nerve Stimulation (TENS)

---

[1] *Motov, Sergey et al. "The Treatment of Acute Pain in the Emergency Department: A White Paper Position Statement Prepared for the American Academy of Emergency Medicine." The Journal of emergency medicine vol. 54,5 (2018): 731-736. doi:10.1016/j.jemermed.2018.01.020*

[2] *Dusek, Jeffery A et al. "Acupuncture in the emergency department for pain management: A BraveNet multi-center feasibility study." Medicine vol. 101,9 (2022): e28961. doi:10.1097/MD.0000000000028961*

[3] *Motov, Sergey, R. Strayer, and B. Hayes. "AAEM White Paper on acute pain management in the emergency department." American Academy of Emergency Medicine (2017).*

[4] *Sakamoto, Jeffrey T et al. "Are Nonpharmacologic Pain Interventions Effective at Reducing Pain in Adult Patients Visiting the Emergency Department? A Systematic Review and Meta-analysis." Academic emergency medicine : official journal of the Society for Academic Emergency Medicine vol. 25,8 (2018): 940-957. doi:10.1111/acem.13411*

appears to reduce pain compared to conventional treatment. Osteopathy decreases pain and swelling in simple limb injuries. Music therapy reduces stress and pain.[5]

In 2018, acupuncture was included in pain management by the Joint Commission International.[6] It has been studied in the ED for conditions such as low back pain, sciatica, post-operative pain, kidney stones, knee pain, headaches, shoulder/elbow/wrist pain, cervical pain, dysmenorrhea, abdominal pain/epigastric pain, and chest pain, showing pain reduction with minimal side effects compared to morphine.[7]

In conclusion, non-pharmacological strategies should be integrated into the ED as they offer multimodal analgesia, patient satisfaction, pain reduction in specific patient groups, as well as reduced anxiety and costs within healthcare systems.

---

[5] *Grover, Casey A et al. "Transcutaneous Electrical Nerve Stimulation (TENS) in the Emergency Department for Pain Relief: A Preliminary Study of Feasibility and Efficacy." The western journal of emergency medicine vol. 19,5 (2018): 872-876. doi:10.5811/westjem.2018.7.38447*

[6] *Wu, Ming-Shun et al. "The Efficacy of Acupuncture in Post-Operative Pain Management: A Systematic Review and Meta-Analysis." PloS one vol. 11,3 e0150367. 9 Mar. 2016, doi:10.1371/journal.pone.0150367*

[7] [7] *Grissa, Mohamed Habib et al. "Acupuncture vs intravenous morphine in the management of acute pain in the ED." The American journal of emergency medicine vol. 34,11 (2016): 2112-2116. doi:10.1016/j.ajem.2016.07.028*

ACUTE POSTOPERATIVE PAIN MANAGEMENT TEAM: THE ROLE OF THE NURSE

Kyveli Zografaki
Nurse, Anesthesiology Department, General Hospital of Athens "Korgialenio-Benakio", Hellenic Red Cross. President of the Anesthesiologic Sector of the Hellenic Nurses Association.

Acute postoperative pain is the most significant defense mechanism of the body. Every patient in pain is unique, and the care plan must address the specific and multidimensional care needs of each individual (physical, psychological, social, cultural, spiritual). Pain management has been recognized by the World Health Organization as a human right. It requires collaboration from an interdisciplinary team, where each member maintains their professional identity while contributing equally through decision-making and the integration of perspectives. Nurses are an integral part of this team.

The role of the nurse develops autonomously within the interdisciplinary team and is expressed through a wide range of activities:

- Describing pain and identifying its causes
- Identifying factors that worsen or alleviate pain
- Defining the concept of pain relief as perceived by each patient
- Seeking and formulating nursing diagnoses
- Providing consultative support in selecting appropriate therapeutic interventions and evaluating their effectiveness.

The work of nurses in pain relief is responsible, multidimensional, and demanding due to its clinical, consultative, coordinating, educational, and research components. The nurse acts as:

- A communication link between the patient, family, and healthcare team members
- An advocate for the patient, especially when the patient’s complaints are questioned. As a supporter, the nurse defends the patient’s right to autonomy and free choice
- An information manager for members of the interdisciplinary team.

Pain relief is a fundamental goal of every healthcare service or system. An effective policy for managing acute postoperative pain in a hospital setting should ensure:

- High-quality patient services based on evidence and adequately equipped staff
- Continuous education for staff providing these services.

It is recommended to establish a Postoperative Analgesia Service primarily composed of anesthesiologists, along with other healthcare professionals. The involvement of an anesthetic nurse, fully or primarily dedicated to monitoring patients, is particularly

important. The continuous presence of nurses with patients experiencing pain in various environments, and the relationships they build with patients and their families, prepares them to take a leadership role in addressing and managing issues arising from patients' pain.

An interdisciplinary approach to the patient in pain requires ongoing education, responsibility, collaboration, task assignment, communication, tolerance, and continuous reassessment. Effective management of acute postoperative pain is a fundamental obligation of every healthcare professional, as well as a basic right of every patient. A person in pain cannot wait.

THE USE OF ANIMATED DRAWINGS FOR CONVEYING INFORMATION ABOUT SURGERY AND PAIN TO PEDIATRIC PATIENTS

Vekrakou Artemis
MD, DESAIC, PhD, Senior Consultant in Anesthesiology, General Children's Hospital of Athens "P. & A. Kyriakou"

In this presentation, we will explore the use of animated videos as a means to convey information about surgical procedures and pain to pediatric patients.

Between 50-75% of children undergoing surgery experience preoperative stress, which may manifest through either externalizing or withdrawal behavior. Preoperative stress is also an independent predictor of postoperative maladaptive behaviors in children. This is certainly a significant concern in pediatric anesthesiology since its inception.

As early as 1958, a publication in Anaesthesia journal, described the use of the "animated puppet trolley screen," an invention so effective that it is still used today.

In 2005, Zeev Kain and his team identified induction of anesthesia as the most stressful moment for children during the preoperative period.

In 2004, the Nursing Department at Manchester published a study on children's own expressed needs for information, revealing that parents often fall short in meeting these informational needs.

In 2009, Kain emphasized that children need comprehensible information regarding the surgical procedure, anesthesia, and, most importantly, pain.

In France, a 2016 study showed that using comics for children's preoperative preparation significantly reduced stress. This technique has since been adopted by the Association of Paediatric Anaesthetists of Great Britain and Ireland (APAGBI), which has a comic featuring the character Dennis on its website.

Based on these data, and with the collaboration of child psychologists, healthcare professionals, artists, animators, and input from the children themselves, animations were developed to address preoperative preparation and pain, as presented in this talk.

Although limited, existing literature suggests that educational programs on pain management can reduce stress, improve cooperation, and decrease ignorance-driven behaviors, such as avoiding physical activities to prevent pain. Animation plays a significant role in these programs, as it can provide children with direct, free, and easy access to reliable information.

https://www.youtube.com/watch?v=NlV2zLkOqjI
https://www.youtube.com/watch?v=ikUzvSph7Z4
https://www.youtube.com/watch?v=eakyDiXX6Uc
https://www.youtube.com/watch?v=jV3G7voqOho

Oral Presentations

EFFICACY AND SAFETY OF INTRAVENOUS ADMINISTRATION OF DEXAMETHASONE ON POST-CAESAREAN DELIVERY PAIN: A SYSTEMATIC REVIEW AND META-ANALYSIS OF CURRENT LITERATURE

D. Ioannopoulos[1], E. Arnaoutoglou[2], G. Tsaousi[3]

1. General Hospital of Nikaia-Piraeus, "Ag. Panteleimon", Anaesthesiology Department, Piraeus, Greece
2. Department of Anaesthesiology, Faculty of Medicine, School of Health Sciences, University Hospital of Larissa, Larissa, Greece
3. Department of Anaesthesiology and ICU, Faculty of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece

Introduction: The likelihood of severe acute postoperative pain after cesarean section is substantial, and insufficient analgesia can negatively affect both maternal and neonatal outcomes. Dexamethasone is a corticosteroid with well-established antiemetic effects, though its analgesic impact remains an area for further investigation.

Objective: This systematic review and meta-analysis aim to evaluate the impact of perioperative intravenous dexamethasone on post-cesarean analgesia, focusing on time to first rescue analgesia and resting pain intensity 24 hours postoperatively.

Data Sources: Searches of PubMed, Scopus, CENTRAL, and PLOS were conducted for randomized clinical trials through February 2024.

Results: Eighteen studies with 1,603 patients were included. Patients receiving dexamethasone exhibited lower pain intensity at 24 hours postoperatively [MD -0.93, 95%CI (-1.32; -0.54), $p<0.01$], and a longer time to first rescue analgesia [MD 3.33, 95%CI (1.67; 4.99), $p<0.01$], though with low-quality evidence (I^2 =96% and 93%, respectively). Significant reductions in pain at 2-3, 4-6, and 12 hours postoperatively were also observed in the dexamethasone group, along with significantly lower 24-hour morphine-equivalent consumption [MD -3.23, 95%CI (-4.04, -2.41), $p<0.01$], with no significant differences in adverse effects.

Conclusion: Perioperative IV dexamethasone appears to be associated with statistically significant pain reduction in the first 24 hours post-cesarean, extending time to first rescue analgesia and reducing overall opioid consumption.

LEVEL OF POSTOPERATIVE PAIN BETWEEN OPIOID FREE ANAESTHESIA AND OPIOID BASED ANAESTHESIA FOR LUMBAR MICRODISCECTOMY SURGERY

M. Tsoumani[1], A. Theodorou-Kanakari[1], E.I.Tataki[1], D. Ioannopoulos[1], E. Iordanidi[1], A. Gkizli[1], R. Saiti[1], P. Ampou- Chantitzi[1], E. Chrona[1], P. Kouki[1]

[1] General Hospital of Nikaia- Peiraeus St. Panteleimon , Anaesthesiology Department, Athens, Greece

Background and Goal of Study: Opioid free anaesthesia (OFA) is gaining ground in many types of operations not only because of opioids' adverse effects avoidance, but also due to benefits of multimodal analgesia. Goal of this study was to compare level of postoperative pain in patients that underwent microdiscectomy and either received OFA or opioid based anaesthesia (OBA).

Material and Methods: After approval from hospital Ethics Committee, 21 consented patients were included. All patients underwent typical lumbar microdiscectomy. Their average age was 50.2 years old. Twelve patients (57%) received OFA and 9 patients (43%) OBA. Mean use of fentanyl was 255μg. Pain management in the OBA group also included remifentanil infusion,dexamethasone (8mg), paracetamol (1 gr) as well as morphine or pethidine in 6 out of 9 patients.

Before incision in OFA group, patients received: ketamine (1mg/kg), dexamethasone (8 mg), dexmedetomidine (0.5 μg/kg), MgSO4 (2.5 gr in 100 mL N/S), and NSAID. Intraoperative analgesia was maintained via lidocaine (1 mg/kg/h) and esmolol infusion based on their sympathetic reaction. At the end of operation, apart from paracetamol (1g), 20 ml of levobupibaicaine 0.25% were injected by neurosurgeons, under erectus spinae muscle. This technique resembles erectus spinae block, but under direct vision. Several factors were recorded, among which postoperative VAS score and need for rescue opioids in PACU. STATA 13.1 was used for statistical analysis.

Results and Discussion: Mean VAS score on emergence was slightly lower for OFA group (VAS 0.58) compared to OBA (VAS 2.1), p=0.18. Mean VAS score in PACU was 0.9 for OFA and 4.1 for OBA group which was strongly statistically significant (p=0.0072). There was increased need for rescue opioids in PACU 5/9 (71.4%) in OBA group compared to OFA group 2/12 (28.5%) p=0.061. Mean VAS score was also lower, 6 hours postoperatively, in OFA group (VAS OFA 2.5 vs VAS OBA 3.7, p=0.26). This difference was not prominent in 12 hours (p=0.69), 24 hours (p=0.42) or during first walk attempt (p=0.93). Among two groups, there was no statistically significant difference for vasopressors use (p=0.195) intraoperatively.

Conclusion: In the present study OFA proved to be better concerning VAS score and rescue opioids in the PACU compared to OBA, in patients that underwent lumbar microdiscectomy. VAS score was better even after six hours postoperatively. More studies are needed in order to consolidate these conclusions.

ESPB (ERECTOR SPINAE PLANE BLOCK) IN PATIENTS WITH POSTOPERATIVE NEUROPATHIC THORACIC PAIN - CASE REPORT

K. Giannopoulos[1,2],
F. Migos[1,2],
D. Velikovits[1],
P. Chloropoulou[1,2],
E. Ketikidou[1,2]

[1]Anesthesiology Department, General Hospital of Kavala
[2]Pain Clinic, General Hospital of Kavala

The Erector Spinae Plane Block (ESPB) is a relatively new approach to pain managementfor a variety of surgical procedures, as well as for managing acute and chronic pain. Due to the novelty of the technique, most of the information we have comes from case reports and empirical data.

Managing chronic pain is the top priority in pain clinics, as chronic pain has now reached epidemic levels. Chronic pain represents a significant burden for patients, thehealthcare system, and society, considering its impact on quality of life, increased disability rates, and higher chances of hospitalization and mortality.

In our clinic, we examined two cases of chronic postoperative neuropathic pain, one from VATS (Video-Assisted Thoracoscopic Surgery) due to tuberculosis and the other from thoracotomy due to lobectomy. Both patients reported pain at an NRS (Numeric Rating Scale) of 7-8/10, while their pharmacological management was challenging dueto side effects and the use of suboxone. We wished to assess the effectiveness of this
specific block, prior to the level of "strong" opioids. After a single interventional methodof the ESPB (30 ml total of ropivacaine and triamcinolone), both patients reported pain at NRS 1-2/10, with results remaining at the same level at the 2-month follow-up.

Due to the existing literature, there is an urgent need for further research, with clearerboundaries regarding methodology, patient pathologies, and the use of specific pharmaceutical solutions (L.A. and steroids).

<u>References</u>

Çiftçi, B. et al. (2020) 'Efficacy of an Ultrasound-Guided erector spinae plane block for

postoperative analgesia management after Video-Assisted thoracic Surgery: aprospective

randomized study,' Journal of Cardiothoracic and Vascular Anesthesia (Print), 34(2), pp.444–449.

https://doi.org/10.1053/j.jvca.2019.04.026.

Krishnan, S. and Cascella, M. (2023) Erector spinae plane block.

https://www.ncbi.nlm.nih.gov/books/NBK545305/.

84
Forero, M. et al. (2016) 'The Erector spinae plane block,' Regional Anesthesia and PainMedicine,

41(5), pp. 621–627. https://doi.org/10.1097/aap.0000000000000451.

De Cassai, A. et al. (2019) 'Erector spinae plane block: a systematic qualitative review,'Minerva

Anestesiologica, 85(3). https://doi.org/10.23736/s0375-9393.18.13341-4.
Díaz-Bohada, L., Segura-Salguero, J.C., Aristizabal-Mayor, J.D., Nelcy Miranda-Pineda,Perea-

Bello, A.H. and Marcin Wąsowicz (2023). Erector spinae plane block, neuropathic painand quality of life after video-assisted thoracoscopy surgery. Pilot, observational study.Anaesthesiology,

Intensive Therapy, 55(2), pp.87–92. doi:https://doi.org/10.5114/ait.2023.128643.

Forero, M., Rajarathinam, M., Adhikary, S. and Chin, K.J. (2017). Erector spinae plane(ESP) block

in the management of post thoracotomy pain syndrome: A case series. ScandinavianJournal of

Pain, 17(1), pp.325–329. doi:https://doi.org/10.1016/j.sjpain.2017.08.013.

Shim, J.-G., Ryu, K.-H., Kim, P.O., Cho, E.-A., Ahn, J.-H., Yeon, J.-E., Lee, S.H. and Kang,D.-Y.

(2020). Evaluation of ultrasound-guided erector spinae plane block for postoperative

management of video-assisted thoracoscopic surgery: a prospective, randomized,controlled clinical trial. Journal of Thoracic Disease, 12(8), pp.4174–4182.
doi:https://doi.org/10.21037/jtd-20-689.

OPTIMIZING PAIN MANAGEMENT IN A HIGH-BLEEDING-RISK PATIENT WITH VON WILLEBRAND'S DISEASE AND LUMBAR DISC HERNIATION: A CASE REPORT

Alevrogianni Fani[1], Klavdianou Olga[1], Stavropoulou Evmorfia[1], Bairaktari Aggeliki[1]

[1]*Anaesthesiology Department, KAT Hospital, Athens, Greece*

Abstract

Background: Von Willebrand's Disease is an inherited bleeding disorder characterized by a deficiency or dysfunction of von Willebrand factor. Patients with this disease present a challenge in the management of chronic pain due to the high bleeding risk. The purpose of this paper is to highlight the complexity of managing a patient with Von Willebrand and chronic lumbar sciatica.

Case presentation: A 65-year-old male patient, presented to our Hospital's Pain Clinic, complaining of persistent back pain and sciatica on the right for three months. His medical history revealed a prior diagnosis of Von Willebrand disease. Lumbar spine MRI revealed findings consistent with degenerative spondyloarthropathy, spinal canal stenosis at the L4-L5 vertebrae level, intervertebral disc prolapse at L3-L4, and notable narrowing of the intervertebral foramina, particularly on the right side.

Results: The patient was initially treated conservatively with pregabalin, duloxetine, tramadol in a titrated dosage for 6 weeks, without significant improvement of his symptoms. After consultation with his Hematologist, he underwent preparation with Haemate (FVIII/FVW) and then an epidural injection was performed at the L4-L5 level. No bleeding complications were noted from the interventional technique. Remission of symptoms >60% and reduction in analgesic requirements was observed 1 week later.

Conclusion: This case highlights the significance of carefully assessing and managing pain in patients with high bleeding risk, such as those with Von Willebrand's Disease. The benefits and potential risks of interventional techniques must be weighed, and proper patient preparation, interdisciplinary collaboration, and compliance with safety protocols must be a top priority.

References

1. Abshire TC. Prophylaxis and von Willebrand's disease (vWD). Thromb Res. 2006;118 Suppl 1:S3-7. doi: 10.1016/j.thromres.2006.01.014. Epub 2006 Mar 31. PMID: 16580053.
2. Connell NT, Flood VH, Brignardello-Petersen R, Abdul-Kadir R, Arapshian A, Couper S, Grow JM, Kouides P, Laffan M, Lavin M, Leebeek FWG, O'Brien SH, Ozelo MC, Tosetto A, Weyand AC, James PD, Kalot MA, Husainat N, Mustafa RA. ASH ISTH NHF WFH 2021 guidelines on the management of von Willebrand disease. Blood Adv. 2021 Jan 12;5(1):301-325. doi: 10.1182/bloodadvances.2020003264. PMID: 33570647; PMCID: PMC7805326.
3. D'arcy Y. Managing osteoarthritis pain in patients with von Willebrand disease. Nursing. 2011 Jul;41(7):19-20. doi: 10.1097/01.NURSE.0000397995.67600.b5. PMID: 21670647.

4. Marrache D, Mercier FJ, Boyer-Neumann C, Roger-Christoph S, Benhamou D. Epidural analgesia for parturients with type 1 von Willebrand disease. Int J Obstet Anesth. 2007 Jul;16(3):231-5. doi: 10.1016/j.ijoa.2007.02.013. Epub 2007 May 16. PMID: 17509867.

5. Anaesthetic considerations in patients with inherited disorders of coagulation. Jitendra SU, Madan N, Smith JG. Contin Educ Anaesth Crit Care Pain. 2015;15:26–31.

6. Current management of von Willebrand disease and von Willebrand syndrome. Stone ME, Mazzeffi M, Derham J, Korshin A. Curr Opin Anaesthesiol. 2014;27:353–358. – PubMed

7. Miesbach W. Perioperative management for patients with von Willebrand disease: Defining the optimal approach. Eur J Haematol. 2020 Oct;105(4):365-377. doi: 10.1111/ejh.13462. Epub 2020 Jul 3. PMID: 32496614.

8. Miesbach W, Berntorp E. Von Willebrand disease - the 'Dos' and 'Don'ts' in surgery. Eur J Haematol. 2017 Feb;98(2):121-127. doi: 10.1111/ejh.12809. Epub 2016 Oct 14. PMID: 27622750.

GENICULAR NERVES RADIOFREQUENCY (RF) NEUROLYSIS FOR PAIN MANAGEMENT ANDMAINTENANCE OF FUNCTIONALITY OF PATIENTS WITH KNEE OSTEOARTHRITIS (OA)

Pain Management Unit General Hospital of Elefsina "Thriasio"

E.Papagianni[1], I.Galanopoulos[2], I.Vila[1],A.D.Souleimani[1], C.Bizios[1], C.Koliafas[1],B.Andreotti[1], A.Kolotoura[1]

1 Department of Anesthesiology & Pain Management Unit General Hospital of Elefsina "Thriasio"
2 Orthopedic Clinic General Hospital of Elefsina "Thriasio"

Study Objective: Knee osteoarthritis (OA) is a degenerative disease that affects millions of patients worldwideand is considered a debilitating issue with a vast socioeconomic cost. Radiofrequency (RF) neurolysis is a minimally invasive method that is used for many chronic pain conditions. In this study, we aim to present thepreliminary results collected over a period of 8 months at our hospital's pain management unit, using RF to manage pain and knee stiffness while maintaining functionality and patient satisfaction, for patients with Kellgren & Lawrence Grade II and III knee osteoarthritis.

Methods: 24 patients (18 female, 6 male) with knee OA, aged between 64 and 86, were selected for this study by our pain management unit team. Under fluoroscopic guidance, following a positive nerve block test with localanesthetic, the superior lateral, superior medial, and inferior medial sensory terminal branches of the sciatic, femoral, and obturator nerves were subjected to RF neurolysis for a total duration of 3 minutes. The patients were
evaluated before the procedure as well as 15 days, 1,3 and 6 months post-procedure, using the numeric ratingscale (NRS) for pain and the knee injury and osteoarthritis outcome score (KOOS). Complications and patient satisfaction were also included in this study.

Results: Patients reported an average pain reduction of 3.5-4 grades on the NRS, while their KOOS functionalityscore improved from 48% to 90%. Patient satisfaction was high and most patients would recommend the procedure to other patients. 4 patients of this study opted for this procedure for the other knee.

Conclusions: RF neurolysis of the sensory genicular nerves is a reliable and safe minimally invasive method formanaging patients with moderate knee OA, who are not fit for surgery or do not choose to undergo surgery. More randomized studies are needed to verify, confirm, and document the above results.

References

1. Jian Liu,et al. Efficacy and safety of radiofrequency treatment for improving knee pain and function in kneeosteoarthritis: a meta-analysis of randomized controlled trials. Journal of Orthopaedic Surgery and Research volume 17, Article number: 21 (2022) /doi.org/10.1186/s13018-021-02906-4
2. Alaa Abd-Elsayed. Radiofrequency Ablation TechniquesAtlas of Interventional Pain Management . 1st Edition -March 13, 2023. ISBN: 9780323870634- eBook ISBN: 9780323875356

3.Radiofrequency denervation for osteoarthritic knee pain Interventional procedures guidance.Published: 28June 2023.www.nice.org.uk/guidance/ipg767

4. Sheryl Lipnick et al,Editorial Commentary: Radiofrequency Ablation for Patients With Osteoarthritis of the Knee Could Be Indicated for Patients Failing Conventional Nonoperative Treatment and Wishing to
AvoidTotal Knee Arthroplasty, Arthroscopy Journal.DOI:https://doi.org/10.1016/j.arthro.2022.03.029

5. David E Jamison &Steven P Cohen .Radiofrequency techniques to treat chronic knee pain: a comprehensivereview of anatomy, effectiveness, treatment parameters, and patient selection.Journal of Pain Research . Volume 11, 2018 – Issue dx.doi.org/10.2147/JPR.5144633

6 . Corey W Hunter, et al.(2022) Consensus Guidelines on Interventional Therapies for Knee Pain (STEP Guidelines) from the American Society of Pain and Neuroscience. J Pain Res. 2022 Sep 8:15:2683-2745. doi:10.2147/JPR.S370469.

THE SAFETY AND EFFICACY OF CRYONEUROLYSIS OF THE GENICULAR NERVES IN THE THERAPEUTIC MANAGEMENT OF KNEE OSTEOARTHRITIS

Pain Management Unit of Elefsina General Hospit[1]al "T[11]HRIASIO"

M.Stamelaki [1] , P.Drakopoulos [2] , S.Velli [1] , M.Kiritsa [1] , C.Hapsa [1], G.Provataki [1] , A.Kolotoura [1] -

1 Anesthesiology Department & Pain Management Unit of Elefsina General Hospital "THRIASIO"

2 Orthopaedic Clinic of the General Hospital of Elefsina "THRIASIO"

Study Objectives: Cryoneurolysis is a promising minimally invasive method in the therapeutic approach for patients with end-stage knee osteoarthritis (OA), who are unwilling or unable to undergo surgery, or for whom surgery is delayed. Our aim is to highlight the benefits and safety of using cryoneurolysis in patients with knee OA, by presenting the preliminary 6-month results of the hospital's Pain Management Unit (PMU).

Methods: 12 patients (9 female, 3 male), aged 65 to 89 years with knee OA were included. Patient selection criteria were determined by a team of medical experts of the hospital's PMU. The patients underwent cryoneurolysis under fluoroscopic guidance of the genicular nerves, which include the sensory end branches of the sciatic, femoral and thyroid nerves of the knee, following a positive blockade test with a local anesthetic. The intervention lasted 6 minutes for each nerve. The outcome was assessed before the treatment as well as 15 days and 1,3 and 6 months after the cryoneurolysis intervention with the numerical NRS pain scale and the KOOS functional scale. Complications were recorded as well as the degree of patient satisfaction.

Results: Pain scores decreased by an average of 4 points in the NRS scale and KOOS functionality increased from 46% to 92%. There was satisfaction with the intervention, patients would choose and recommend it to other patients, while 2 of them would choose it as a treatment for the other knee. No complications were recorded.

Conclusion : Cryoneurolysis of the sensory nerve branches of the knee appears to be a promising effective and minimally invasive method for the management of patients with knee OA who are unwilling or unable to undergo surgery. More controlled and randomized studies are required to verify the above results and substantiate the safety of the use of the technique.

Bibliography

1. Christopher M Tidwell , Paul J DeMarco . Temperature-Mediated Neural Interventions in Knee Osteoarthritis: A Review of Cryoneurolysis and Cooled Radiofrequency Ablation with Ultrasound Guidance. Curr Rheumatol Rep. 2024 Mar; 26 (3): 89-95. doi: 10.1007/s11926-023-01127-4
2. Emily Biel et al. The applications of cryoneurolysis for acute and chronic pain management. Pain Pract. 2023 Feb;23(2):204-215. doi: 10.1111/papr.13182.
3. R. Radnovic et al . Cryoneurolysis to treat the pain and symptoms of knee osteoarthritis: a multicenter, randomized, double-blind, sham-controlled trial . Osteoarthritis and Cartilage Volume 25, Issue 8, August 2017, Pages 1247-1256

DOI:https://doi.org/10.1016/j.joca.2017.03.006
4. Dion Diep et al . Cryoneurolysis for non-cancer knee pain: A scoping review. Interventional Pain Medicine Volume 2, Issue 2, June 2023, 100247 https://doi.org/10.1016/j.inpm.2023.100247
5. Andrea M Trescot. Cryoanalgesia in interventional pain management. Pain Physician. 2003 Jul;6(3):345-60. .PMID: 16880882
6. David L Chang Et al. Applications of Cryoneurolysis in Chronic Pain Management: a Review of the Current Literature . Curr Pain Headache Rep. 2024 Feb 19. doi: 10.1007/s11916-024-01222-w

RADIOFREQUENCY (RF) NEUROLYSIS OF THE KNEE NERVES FOR THE MANAGEMENT OFPAIN AND FUNCTIONALITY IN PATIENTS AFTER TOTAL KNEE ARTHROPLASTY

Pain Management Unit Thriasio General Hospital of Elefsina,
Greece **I.Vila[1] , Galanopoulos[2], E.Papagianni[1] ,S.Tatantili [1],**
E.Gialitaki [1],P.Alevizopoulou [1], P. Drakopoulos [2], A.Kolotoura [1]1

1. Anesthesiology Department and Pain Unit "Thriasio" General Hospital of Elefsina
2. Orthopedic Clinic "Thriasio" General Hospital of Elefsina

Objective: :Total knee arthroplasty (TKA) is a successful and well-established procedure for the treatment of severe osteoarthritis. Despite the improvement regarding the techniques and the materials used, 15-20% of patients have persistent postoperative pain, stiffness, and reduced range of motion which hampers the recovery and increases the opioids consumption. The aim of our study is to evaluate the effectiveness and safety of radiofrequency neurolysis (RF) in patients with priorTKA for faster functional recovery and pain relief.

Method: Ten patients were included (7 women and 3 men) aged 65-78 with a history of TKA in the last 3-12 months. The selection criteria for the patients were determined by a team of healthcare professionals in the field. The patients underwent RF neurolysis under fluoroscopic guidance of the upper lateral, upper medial, and lower medial sensory terminal branches of the sciatic, femoral, and thyroid nerves of the knee, after a positive block test with a local anesthetic.The procedure lasted 3 minutes for each nerve. Patients were assessed before the treatment, at 15 days, in 1 and 3 months post-intervention with the Numeric Rating Scale (NRS) for pain, the KOOS functional scale, and the range of motion (ROM) evaluation. Complications and the degree of patient satisfaction were recorded as well.

Results:Pain scores decreased by an average of 4 points on the NRS scale, ROM increased by an average of 20 degrees, and functionality according to KOOS improved from 52% to 96%. There was satisfaction with the intervention, patients mentioned that they would choose it again and recommend it to others. No complications were recorded, and there was a significant reduction in the use of analgesics.

Conclusion: Radiofrequency neurolysis of the sensory nerve branches of the knee appears to be a promising, effective, and minimally invasive method for the functional rehabilitation and quicker recovery of patients after TKA with persistent pain, reduced ROM, and knee stiffness. More controlled and randomized studies are needed to confirm and validate the effectiveness and safety of the method.

Bibliography

1. B. Meiling et al, The therapeutic effect of genicular nerve radiofrequency for chronic knee pain after a total knee arthroplasty: A systematic review .Interventional Pain Medicine Volume 1, Issue 1, March 2022, 100072 https://doi.org/10.1016/j.inpm.2022.100072
2. Bistolfi A. et al. Radiofrequencies for painful total knee Arthroplasty: rationale and applications.A review.Open Access Text .DOI: 10.15761/PMRR.1000156.
3. Lakshmi Vas et al. Successful Management of Chronic Postsurgical Pain Following Total

Knee Replacement . Pain Medicine, Volume 15, Issue 10, October 2014, Pages 1781–1785, https://doi.org/10.1111/pme.12508

4. Radiofrequency Ablation for the Treatment of Post-knee Arthroplasty Chronic Pain. (CSAPG-37)
5. Cheppalli N. et al . Safety and Efficacy of Genicular Nerve Radiofrequency Ablation for Management of Painful Total Knee Replacement: A Systematic Review,(November 11, 2021) Cureus 13(11): e19489. doi:10.7759/cureus.19489)

TREATMENT OF CHRONIC SPASTICITY OF A PATIENT WITH MULTIPLE ISCHEMIC STROKES WITH SUBARACHNOID ADMINISTRATION OF BACLOFEN THROUGH AN INTRATHECAL DRUG ADMINISTRATION PUMP

Pain Management Unit of "Thriasio" General Hospital of Elefsina

A-D Souleimani[1], A. Kyrou[2], M. Kiritsa[1], M. Stamelaki[1], C.Bizios[1], C. Nikolaidou[3],**An. Salaha[2], A. Kolotoura[1]**

1. Anesthesiology Department & Pain Management Unit, "Thriasio" General Hospital of Elefsina
2. Department of Physical Medicine and Rehabilitation, "Thriasio" General Hospital of Elefsina
3. Psychology Department, "Thriasio" General Hospital of Elefsina

Aim: Presentation of the management of a patient with tetraplegia following multiple strokes, accompanied by severe spasticity and neuropathic pain, with the use of an intrathecal baclofen pump.

Case presentation: The patient, a 51- year- old female, with Systemic Lupus Erythematosus and multiple ischemic episodes due to antiphospholipid syndrome that resulted in tetraplegia accompanied by neuropathic pain and spasticity visits the Pain Management Unit (PMU) of "Thriasio" General Hospital of Elefsina. The patient's medical history started at the age of 17, when the first ischemic stroke and right upper and lower limb rigidity occurred. At the age of 21, the patient suffered a second ischemicstroke with subsequent left hemiplegia, rigidity and left lower limb hypertonia. This was followed by a heart attack, at the age of 24 and an abdominal aorta and right iliac artery thrombosis, at the age of 44. The patient was then referred to the PMU. During that visitation it was mentioned that despite the pharmaceutical treatment, physiotherapy and ergotherapy the patient remains bed- ridden, and has difficulty in her daily activities such as use of a wheelchair, getting dressed and personal hygiene. The physical examination showed severe spasticity of the upper and lower limbs, especially on the left, accompanied by pain and trouble in concentration. The pharmaceutical treatment included a combination of antipsychotics, antidepressants, anticoagulants and baclofen. After taking into consideration the patient's overall status, a test dose of subarachnoid baclofen was administered which resulted in considerable reduction of the spasticity andpain. During the procedure, there was great difficulty placing the patient on the surgical table, mainly because of the spasticity, but also due to the pain At the end of 2022, a permanent intrathecal baclofen pump was implanted. Despite the delayed treatment of the spasticity, the subarachnoid administration of baclofen through a permanent pump showed a considerable improvement of the patient's mobility as well as of the quality oflife. As of 2024, the patient can stand and walk with a cane.

Conclusions: The intrathecal administration of baclofen through an implanted pump is a safe and effective method of treating chronic spasticity and can considerably improve neuropathic pain as well as a patient's mobility.

Bibliography:

1. Konstantina Petropoulou, MD, PhD. Management with a Focus on Rehabilitation(march2017).https://www.neuromodulation.com

2. Ki Deok Park, Min-Keun Song. Intrathecal Baclofen Injection Efficacy for Spasticity Management inPatients With Stroke: A Meta-Analysis
Brain Neurorehabi. 2024 Jan 17;17(1): e3. doi:10.12786/bn.2024.17. e3.

3. Michael Creamer et al. Effect of Intrathecal Baclofen on Pain and Quality of Life in PoststrokeSpasticity..Stroke. 2018 Sep;49(9):2129-2137. doi:10.1161/STROKEAHA.118.022255.

4. Hui Ping Lee at al. The impact of intrathecal baclofen on the ability to walk: A systematic review.Clin Rehabil. 2023 Apr;37(4):462-477. doi: 10.1177/02692155221135827.

5. Simone M E van der Gaag et al.Evaluating Community-Based Intrathecal Baclofen Therapy: Effectiveness, Safety, and Feasibility. J Clin Med. 2024 Mar 22;13(7):1840. doi: 10.3390/jcm13071

PRESENTATION OF AN INTERESTING CASE
TREATMENT OF NEUROPATHIC PAIN WITH CONCOMITANT SPASTIC QUADRIPLEGIA THROUGH INTRATHECAL BACLOFEN PUMP

Pain Management Unit of Elefsina General Hospital "THRIASIO"

S. Velli[1], Ch. Bizios[1], M. Matala[1] , I. Villa[1] , M. Kyritsa[1] , Chr.Nikolaidou [3], An. Salacha[2] , A. Kolotoura[1]

1. Anaesthesiology Department & Pain Management Unit of Elefsina General Hospital "THRIASIO"
2. Department of PM&R, General Hospital of Elefsina "THRIASIO"
3. Department of Psychologists, General Hospital of Elefsina "THRIASIO"

Purpose of the study: Presentation of the management of a case with severe spastic quadriplegia and treatment of neuropathic pain through intrathecal pump administration of baclofen.

Case presentation: The patient is a 26-year old man with severe spastic quadriplegia, sympathetic hyperreactivity, orthostatic disorders, sporadic seizures and neuropathic pain. This is a result of an accident-causing fracture of C3 and C4 vertebrae and spinal cord injury. The patient underwent surgery with a C4 vertebral disarticulation and anterior spinal fusion in 2021. The conservative treatment with oral medication (even in high doses), to resolve the spasticity, did not work. The severity of the spasticity, the young age as well as the psychological impact of the disease contributed to a poor quality of life of the patient. According to WHO international guidelines, the patient had an absolute indication for implantation of a permanent intrathecal baclofen pump. For this reason, the patient was referred to the Pain Management Unit of the Elefsina General Hospital. There was serious concern due to the increased perioperative risk: whether the implantation could be performed without serious complications, as well as the therapeutic pharmacological management. As per protocol, a trial intrathecal injection of 50 mcg of baclofen was initially administered, which had a positive effect since it significantly improved spasticity, pain and passive mobility. At the beginning of 2023 the implantation of the permanent intrathecal pump of baclofen was performed which gradually improved the spasticity, pain and especially the quality of life of the patient.

Conclusions: Intrathecal administration of baclofen through an implantable pump is an appropriate, safe and effective alternative in the treatment of severe spasticity after severe spinal cord injury, with the necessary condition of individualization and gradual titration.

Bibliography

1. Konstantina Petropoulou, MD, PhD . Management with a Focus on Rehabilitation(march2017). https://www.neuromodulation.com

2. Nicholas Dietz et al.Intrathecal and Oral Baclofen Use in Adults With Spinal Cord Injury: A Systematic Review of Efficacy in Spasticity Reduction, Functional Changes, Dosing, and Adverse Events Intrathecal and Oral Baclofen Use in Adults With Spinal Cord Injury. Arch Phys Med Rehabil. 2023 Jan;104(1):119-131. doi: 10.1016/j.apmr.2022.05.011.

3. Artur Biktimirov et al. Neuromodulation and quality of life for patient with spasticity after spinal cord injury Int Rev Neurobiol. 2023:172:79-99. doi: 10.1016/bs.irn.2023.03.003.

4. Elmar M Delhaas et al.Intrathecal baclofen as emergency treatment alleviates severe intractable autonomic dysreflexia in cervical spinal cord injury. J Spinal Cord Med. 2021 Jul;44(4):617-620. doi: 10.1080/10790268.2019.1695080.

5. Amanda McIntyre,et al. Examining the effectiveness of intrathecal baclofen on spasticity in individuals with chronic spinal cord injury: a systematic review . J Spinal Cord Med. 2014 Jan;37(1):11-8. doi: 10.1179/2045772313Y.0000000102

CHRONIC NEUROPATHIC PAIN IN A PATIENT WITH SUBSTANCE ABUSE AND VASCULITIS ASSOCIATED WITH HEPATITIS C: CASE PRESENTATION AND LITERATURE REVIEW

A. Kotroni 1, P. Vardakis 1, E. Koutoulaki 1, A. Bogas 1, P. Vasilos 1, G. A. Papaioannou 1,2, V. Nyktari 1,2

1 Anesthesiology Clinic, University Hospital of Heraklion

2 Medical School, University of Crete

Introduction: Managing chronic pain in patients with a history of polysubstance abuse poses a formidable challenge. This report provides a comprehensive analysis of the approach to managing chronic substance use and neuropathic pain in patients.

Case Presentation: A 44-year-old patient presented to the Pain Clinic reporting severe pain in the lower limbs, accompanied by weakness and gait instability. The patient's medical history revealed a protracted pattern of polysubstance abuse originating in childhood, leading to psychotic episodes. Over the past 24 months, the patient has been undergoing substitution therapy with buprenorphine, anxiolytics (diazepam and alprazolam), and pregabalin. Additionally, the patient reported using cannabis for sleep and anxiety. Clinical examination unveiled indications of poor nutrition, impaired cognitive functions, signs and symptoms of peripheral neuropathy, and trophic changes in the lower limbs. Subsequently, referral for evaluation by a gastroenterologist, neurologist, and electromyographic study was recommended. The evaluation revealed a severe degree of symmetric sensorimotor axonal polyneuropathy. The differential diagnosis included peripheral neuropathy related to vasculitis due to cryoglobulinemia in the context of hepatitis C, toxic polyneuropathy from drug abuse, and Complex Regional Pain Syndrome type II.

Discussion: There exists a well-established correlation between HCV infection and neurodegenerative disorders, as well as painful conditions, particularly among individuals with a history of chronic substance use. However, this association is frequently overlooked as a potential and reversible contributor to chronic pain. Peripheral neuropathy resulting from HCV infection is most attributed to neurodegeneration induced by vasculitis associated with cryoglobulinemia. The typical clinical presentation encompasses sensory disturbances, pain, and burning sensations in the lower extremities.

Conclusion: In the evaluation of patients at high risk for viral hepatitis, it is crucial to conscientiously consider HCV infection as a potential underlying cause of chronic neuropathic pain.

RETROSPECTIVE STUDY OF DRUG INTERACTIONS IN PATIENTS FROM THE CHRONIC PAIN CLINIC OF THE UNIVERSITY GENERAL HOSPITAL OF HERAKLION

E. Koutoulaki[1], G. Papastratigakis[1], P.Vardakis[1], M. Moumtzidou[1], M. Samaritaki[1], C. Mandola[1] , G. Stefanakis[1], G. Frantzeskos[1], A. Papaioannou[1,2], V. Nyktari[1,2]

[1] Anaesthesiology Department, University Hospital of Heraklion

[2] University of Crete, Medical School

Purpose: Patients with chronic pain typically present with comorbidities for which they are already receiving medication, thus a significant percentage of patients experience polypharmacy even extensive polypharmacy prior to their visit to the pain clinic.[8] In the meantime, a vast majority of the treatments offered by a pain clinic is also pharmacological. This leads to exposure to potential drug interactions and increased adverse effects. [9] The purpose of this study is to investigate the drug interactions exhibited by patients who were first examined in the pain clinic of the University General Hospital of Heraklion during the year 2023, using the tool https://www.galinos.gr/web/drugs/main/crossCheck.

Results: A total of 295 patients (104 men and 191 women) were included in the study, who were taking a total of 419 different medications, with an average of 14 substances per patient (±6.68). Drug interactions were assessed among substances exhibiting analgesic, antiemetic, gastrokinetic, sedative properties, as well as dietary supplements, in comparison to any substances the patients were already receiving or that were prescribed by the pain clinic. A total of 984 different drug interactions were identified through the interaction checking tool, with the most common substance being tramadol, which had 87 different interactions including 47 with tapentadol and 36 with duloxetin, followed by fentanyl and duloxetine. Notably, curcumin, contained in turmeric sumplement, showed contraindications for co-administration with tramadol, escitalopram, and mirtazapine. A cumulative total of 3,606 interactions were recorded across all patients, with each patient exhibiting 12.2 interactions (±11.1), the majority of which (92.8%) were classified by the tool as "High Severity," and 57 (1.58%) were classified as "Contraindication for Co-administration." The result of the interactions was primarily due to decreased or increased metabolism of the drug. Further analysis of patients based on gender did not reveal statistically significant differences (p=0.93).

Conclusion: Patients presenting to the pain clinic show high rates of polypharmacy and drug interactions that expose them to adverse effects and complicate their therapeutic management. It is recommended each clinician to use this kind of drug interaction checking tools to asses the andministered drugs or food sumplements in order to avoid further drug interactions and advese effects.

---

[1] *Zahlan, Ghita et al. "Polypharmacy and Excessive Polypharmacy Among Persons Living with Chronic Pain: A Cross-Sectional Study on the Prevalence and Associated Factors." Journal of pain research vol. 16 3085-3100. 12 Sep. 2023, doi:10.2147/JPR.S411451*

[1] *Taylor, Robert Jr et al. "Economic implications of potential drug-drug interactions in chronic pain patients." Expert review of pharmacoeconomics & outcomes research vol. 13,6 (2013): 725-34. doi:10.1586/14737167.2013.851006*

CHRONIC POST-SURGICAL PAIN

M. Mantouvalou, R. Saiti, A. Theodorou-Kanakari, D. Tsitoura, P. Amou-Hantidji, E. Iordanidi, A. Gizli, V. F. Daviidi, E. Chrona, S. Vaggelis
General Hospital of Nikaia-Piraeus "Agios Panteleimon"

Chronic post-surgical pain (CPSP) is defined by the International Association for the Study of Pain (IASP) as pain that recurs or persists along an incision at least three months following surgical procedure. Goal of this study was to investigate the CPSP incidence 6 months postsurgery, and its relation regarding age, gender, ASA and type of anaesthesia and perioperative analgesia.

After approval from hospital's Ethics Committee, 42 consented patients were included. Out of 42 patients, 22 (52%) had underwent open inguinal hernia repair, 4 (10%) thoracotomy for lobectomy, 7 (17%) total knee arthroplasty, 5 (12%) total hip arthroplasty, 3 (7%) hysterectomy and 1 (2%) open radical nephrectomy. A numerical analogue scale (NRS score) was used for pain assessment. Patients' overall health status was evaluated using ASA score. Type of anaesthesia used was either general (76%) or subarachnoid block (24%). Nine patients (21%) received postoperative continuous epidural infusion, nine patients received PCA, while the rest received standard ward analgesia (paracetamol qid, and opioids on demand). All patients were contacted by phone 6 months after surgery and were evaluated using the Douleur neuropathique questionnaire (DN4). CPSP was defined as DN4 score above 3. Regression analysis, t-test and analysis of variance were used in statistical analysis. STATA was used as method for statistical analysis.

Out of 42 patients, 25 were male (60%) and 17 were female (40%). Mean age was 65±10 years. Postoperative mean NRS score in the PACU was 2.5 ± 2.3. No statistically significant correlation was found between postoperative NRS score with DN4 score. Out of 42 patients, only 2 had DN4 ≥ 4. They both had inguinal hernia repair. Patients that received continuous epidural infusion had a lower mean DN4 score related to those with standard ward care (0.28±0.5 vs 1.4±1.5) which was statistically significant (p 0.04). Female patients had lower mean DN4 score related to male (0.6±1.1 vs 1.6±1.5, p 0.03). No statistically significant difference was found between type of anaesthesia.

This study showed that anaethesia type is not related with CPSP. It appears that epidural postoperative analgesia and female gender are related to lower DN4 score. Studies involving larger number of patients are required in order to confirm the results.

THE CONTRIBUTION OF MINDFULNESS AND COMPASSION IN THE MANAGEMENT OF CHRONIC PAIN, AND THE PICTURE IN THE FOLLOW UP RIGHT AFTER PROGRAM COMPLETION, 3 AND 12 MONTHS LATER

- Despina Yannouli, Certified Mindfulness Teacher – Breathworks (UK)
- Dimitra Christina Kalempoumpa, Resident of Anaesthesiology, 251 Hellenic Airforce General Hospital, Athens, Greece
- George Frantzeskos, Head of Anaesthesiology Dep't & Pain Clinic, University Hospital of Heraklio (Crete)
- Donika Zaimi, Anaesthesiologist, Dept Head NHS, Anaesthesiology Dept & Pain Clinic, General Hospital of Thessaloniki "Hippokrateio"
- Maria Kokolaki, Head of Anaesthesiology, Scientifically & Administratively Responsible for the Anaesthesiology Dept & the Pain Clinic of General Hospital of Attica "Sismanoglio-Amalia Fleming"

Introduction

Chronic pain management is a complex process. This attempt focuses on the relief of bodily and psychological symptoms. Over the last years, mindfulness and compassion based interventions in the context of a certified 8-week course, seem to provide relief to patients and help them in managing their health condition.

Methodology

Evaluation of the level of pain in 48 patients (42 females and 6 males) with chronic pain, before, at the end, in 3 months and in 12 months after their participation in the online Breathworks' program "Mindfulness for Health". The McGill Pain Questionnaire-short form (SF-MPQ GR) was used, as well as the Present Pain Index (PPI) and the Visual Analog Scale (VAS), as they have been validated in the Greek language. The VAS scale was used for the pain evaluation the week before. They were all completed by participants at the beginning, at the end, 3 months and 12 months later. Qualitative data were also collected. For the evaluation of results the paired t-test and the linear mixed models were used. The main diseases from which participants suffered included musculoskeletal pain, fibromyalgia and rheumatoid diseases. The age of participants ranged from 22 to 73 y.o. with average age 49.5 years.

TABLE 1 – Initial frequency of diseases

Disease	Number	Percent
Orthopedic Mainly: neck pain, lower back pain	20	41.67%
Cancer	4	8.33%
Fibromyalgia	11	22.92%
Other rheumatoid origin pain (RA, lupus)	7	14.58%

Other categories (emotional-depression, migraine, sickle cell anemia, autism)	5	10.42%
Non reporting	1	2.08%
Total:	48	100%

Results

The statistical analysis of the data clearly demonstrates the efficacy of the methodology, which seems to decrease by time. Age and sex do not lead to statistically significant differences. An analysis, based on time lapsed since the beginning of the intervention -where the baseline of the pain intensity was set as baseline-, followed.

TABLE 2 - Differences BEFORE & RIGHT AFTER

	Difference	P-value	95% CI
SFMPQ	-5.39	0.0000026	3.36 - 7.42
PPI	-1.39	0.0000082	0.83 - 1.95
Average pain intensity during last week	-0.56	0.0006727	0.25 - 0.87

48 participants

TABLE 3 – Average pain improvement

	Average before (values range)	Right after	t-value	3mo	t-value	12 mo	t-value
SFMPQ	17.625 (2-45)	5.396	4.87.3	5.254	3.356	2.56	1.22
Pain intensity last week	5.104 (1-10)	1.3958	4.528	1.7632	3.917	1.3834	2.851
Pain intensity during completion of questionnaire	1.77 (0-5)	0.5625	3.278	0.5383	2.174	0.4086	1.532
Number of participants		48		20		10	

T-value > 2 means statistically significant

\

Discussion

This study proves the efficacy of the method. Further studies are needed to overcome weaknesses, such as the existence of a control group, as well as the smaller sample during follow-up which resulted in the loss of statistical significance. Also, there was no control as to whether participants used other interventions in parallel with the one under study. Finally, there is no follow-up to demonstrate whether the patients continued with the practices they learnt during the program.

THE CONTRIBUTION OF MINDFULNESS AND COMPASSION IN THE MANAGEMENT OF CHRONIC PAIN – QUALITATIVE ANALYSIS

- Despina Yannouli, Certified Mindfulness Teacher – Breathworks (UK)
- Dimitra Christina Kalempoumpa, Resident of Anaesthesiology, 251 Hellenic Airforce General Hospital, Athens, Greece
- George Frantzeskos, Head of Anaesthesiology Dep't & Pain Clinic, University Hospital of Heraklio (Crete)
- Donika Zaimi, Anaesthesiologist, Dept Head NHS, Anaesthesiology Dept & Pain Clinic, General Hospital of Thessaloniki "Hippokrateio"
- Maria Kokolaki, Head of Anaesthesiology, Scientifically & Administratively Responsible for the Anaesthesiology Dept & the Pain Clinic of General Hospital of Attica "Sismanoglio-Amalia Fleming"

Introduction

In the context of complexity involved in the management of chronic pain, the intervention "Mindfulness for Health" offered online as an 8-week course for teams, seems to offer relief to patients and help them manage their health condition with the use of Acceptance. The program is based on the realisation of the existence of ruminating untrue thoughts and thus replace them with more favorable, meditative practices as well as smooth mindful body movements.

Methodology

Evaluation of the level of pain of 48 patients (42 females and 6 males) at the beginning and at the end of the course, as well as 3 months and 12 months after the end of their participation in the 8-week Breathworks' course "Mindfulness for Health". The validated McGill Pain Questionnaire-short form (SF-MPQ GR) was used, as well as the Present Pain Index (PPI), which were completed by the participants at the beginning, at the end, 3 months and 12 months after the end of the course. Qualitative data were also collected upon course completion and 12 months later, inviting participants to answer freely to the following questions:

- "Do you continue with the practices you learnt during the 8-week course "Mindfulness for Health"? If yes, with which ones? If not, why?"
- "Would you participate in a program similar to this one, as a continuation of your previous participation? Please justify your answer"

14 participants replied to this part of the questionnaire.

For the standardization and the segmentation of the qualitative data, the thematic analysis method was used.

Results

The statistical analysis clearly demonstrates the efficacy of this method, which seems to decrease by time. Despite this fact, it is important to evaluate the qualitative characteristics of the results, and not only the numbers. For examples, as one can see on Table 2, two people responded that they wouldn't participate again, yet their answers show positive attitude towards the program as one of them noted that "I don't need it at this time, "…" I am grateful for my participation" and the other one stated that he/she would prefer to participate in a mindfulness program with another focus, i.e. not pain but stress.

TABLE 1 - "Do you continue (12 months later) with the practices you learnt during the 8wk course M4H? If yes, with which ones. If not, why?"

	Number of participants
Yes – Meditations only	6
Yes – Way of thinking and movement	1
Yes – Meditations and way of thinking	4
No – None of the two	2
Total:	13*

* 1 participant replied only to the second question

TABLE 2 - "Would you participate in a program similar to this one, as a continuation of your previous participation? Please justify your answer"

	Number of participants
Yes	12
No	2
Total:	14

At the end of the program 13 people responded with a common thread amongst all answers that the program significantly contributed to the psychological management of their pain, mainly through the practices of acceptance, self-care and kindness, and thus they ended up with a diminishing pain volume in the background.

\

CLINICAL INVESTIGATION OF THE APPLICATION OF 5% LIDOCAINE TRANSDERMAL PATCHES 'OFF-LABEL' IN PATIENTS AT THE PAIN CLINIC: A RETROSPECTIVE STUDY

M.Moumtzidou[1], E. Koutoulaki[1], P. Vardakis[1], G. Frantzeskos[1], A. Papaioannou[1,2], V. Nyktari[1,2]

[1]*Department of Anaesthesia University Hospital of Heraklion*

[2]*Medical School of Universtity of Crete*

Aim of the study: The use of 5% lidocaine transdermal patches has been approved in several countries for the treatment of postherpetic neuralgia. Limited absorption of lidocaine and minimal systemic side effects have led to its use in treating other neuropathic pain conditions, such as diabetic neuropathy, postoperative pain, and cancer pain, based on currently low-quality studies. The purpose of this study is to investigate the effect of 5% lidocaine patches in patients with localized neuropathic pain who visited the pain clinic of a university hospital in Heraklion, Crete the year 2023.

Methods: Data was obtained from individual patient records at the pain clinic, encompassing demographic characteristics, pain type, medical condition, self-reported pain intensity using a numerical scale before and after patch application, as well as the reduction in concomitant analgesic treatment.

Results: The data were acquired from a group of 30 patients who were prescribed the 5% lidocaine patch and subsequently underwent at least one follow-up examination. Among the cohort, five individuals (16.6%) were excluded from the analysis due to their on-label use of the patch for postherpetic neuralgia. Among the remaining 25 patients, the distribution of patch usage was as follows: eleven (44%) for postoperative pain, eight (32%) for neuropathic pain of another aetiology, three (12%) for neuropathic cancer pain, two (8%) for mixed nociceptive and neuropathic pain, and one (4%) for post-radiation neuropathic pain. A significant majority, twenty out of 25 (80%), reported a reduction in pain of over 30% from their initial numerical self-reported score (NRS). Additionally, 13 out of 25 (52%) of the patients reduced their analgesic treatment at follow-up. The average duration of patch use was 4.36 months.

Conclusion: The utilization of lidocaine patches represents a viable option with favorable outcomes in the management of acute and chronic neuropathic pain, particularly when integrated into a multifaceted analgesic approach.

References:

1. Voute M, Morel V, Pickering G. Topical Lidocaine for Chronic Pain Treatment. Drug Des Devel Ther. 2021 Sep 29;15:4091-4103. doi: 10.2147/DDDT.S328228. PMID: 34616143; PMCID: PMC8487862.

2. Menz BD, Wahba MWF, Slattery P, Thiruvenkatarajan V, Johnson JL. A Retrospective Study of Topical Lidocaine 5% Plasters in Chronic Off-Label Pain Conditions. Pain Med. 2021 Oct 8;22(10):2404-2406. doi: 10.1093/pm/pnaa408. PMID: 34624119.

PSYCHOLOGICALLY INFORMED PHYSICAL THERAPY MODEL FOR THE ASSESSMENT AND MANAGEMENT OF CHRONIC MUSCULOSKELETAL PAIN THROUGH SELF- MANAGEMENT STRATEGIES

***Athanasios Kontos*, PT, MSc(Pain), Dip MDT, Instructor MDT** [1,2,3]

[1]Postgraduate program in Algology, Medical School of the National and Kapodistrian University of Athens, 11527, Athens (tha.kontos@gmail.com)

[2]McKenzie Institute Hellas, 11141, Athens
[3]Mechanical Pain Clinic, 11141, Athens

Introduction: Chronic pain is a significant global health concern, a leading cause of functional disability, and a contributor to rising healthcare costs. Recent years have seen a notable surge in interest in implementing biopsychosocial non-pharmacological interventions for chronic musculoskeletal pain, focusing on self-management strategies. Psychologically informed physical therapy (PIPT) is an innovative approach that blends traditional physical therapies with cognitive-behavioral techniques.

Purpose: Despite its potential, the adoption of psychologically informed practice by physical therapists faces implementation challenges, resulting in varied outcomes. To address this, we conducted a narrative literature review on PIPT, aiming to synthesize practices and propose a comprehensive self-management-based model.

Materials and Methods: A comprehensive narrative literature review was conducted to explore the current landscape of psychologically informed physical therapy (PIPT) for chronic musculoskeletal pain. The search strategy included electronic databases such as PubMed, Google scholar and PsycINFO, covering literature up to October 2023. Keywords and Medical Subject Headings (MeSH) terms used in the search included "psychologically informed physical therapy," "chronic musculoskeletal pain," "biopsychosocial interventions," "self-management strategies," and related synonyms. Search included peer-reviewed articles published in English. Selected studies were analyzed to identify common practices, implementation barriers, and facilitators, which informed the synthesis of a comprehensive self-management-based PIPT model.

Results: There is an increasing body of evidence suggesting the effectiveness of PIP approaches in managing painful musculoskeletal conditions. However, beliefs of clinicians, their training in using behavioral and psychological interventions, insufficient training, limited time, and concerns about not meeting patients' expectations for the provision of conventional physical therapy have been reported as some of the difficulties in adopting PIP for the care of patients with musculoskeletal pain.

Conclusions: The literature review suggests that the proposed PIPT model which is based on self-management, holds promise for assessing and managing chronic musculoskeletal pain. Future research priorities include evaluating the cost-effectiveness of the proposed model and developing

an educational framework for physical therapists to optimize the implementation of the suggested practices.

References

1. Cohen, S.P., Vase, L. and Hooten, W.M. (2021) 'Chronic pain: an update on burden, best practices, and new advances', The Lancet, 397(10289), pp.2082–2097.
2. Ballengee, L.A., Zullig, L.L. and George, S.Z. (2021) 'Implementation of Psychologically Informed Physical Therapy for Low Back Pain: Where Do We Stand, Where Do We Go?', Journal of Pain Research, Volume 14, pp. 3747–3757.
3. Keefe, F.J., Main, C.J. and George, S.Z. (2018) 'Advancing Psychologically Informed Practice for Patients With Persistent Musculoskeletal Pain: Promise, Pitfalls, and Solutions', Physical Therapy, 98(5), pp. 398–407

Key words

chronic musculoskeletal pain, biopsychosocial model, cognitive behavioral therapy, psychologically informed physical therapy, self-management

THE PHILOSOPHICAL FOUNDATIONS OF NARRATIVE MEDICINE AND THE QUESTIONOF PAIN

P. Bousios[1]

This presentation aims to explore the philosophical foundations of narrative medicine, with a central focus on the experience of pain. Pain is not merely a physiological sensation; it touches on profound aspects of human existence, encompassing vulnerability, embodiment, and suffering. The works of major philosophers such as Merleau-Ponty, Sartre, Levinas, and others have extensively examined concepts like the body, pain, vulnerability, and illness. These philosophical analyses have either implicitly shaped or explicitly informed the ideas of key physicians who sought to bring a more human-centered approach to medicine in the late 20th century.

Many physicians, including Edmund Pellegrino, Drew Leder, and Eric Cassell, have drawnon these philosophical reflections to reconsider the nature of illness, distinguishing it from disease. Their work seeks to elevate the significance of the lived experience of pain, moving beyond a purely biomedical perspective to one that recognizes the experiential and existential dimensions of suffering.

Following these theoretical clarifications, this presentation will examine the contributions of Rita Charon, a pathologist and prominent advocate of narrative medicine. Charon's work emphasizes the importance of patient narratives and the deeply personal and specific nature of pain, advocating for a more empathetic and holistic approach to medical care.

The ultimate goal of this presentation is to reveal the philosophical foundations of narrative medicine, while also highlighting the profound implications of pain as a central question in this modern medical approach. By examining the intersection of philosophy andmedicine, we gain deeper insight into the ways in which pain and suffering are understood, experienced, and treated in contemporary healthcare.

[1] PhD in Philosophy, University of Ioannina, Greece

THE INCIDENCE OF NEUROPATHIC PAIN IN PATIENTS WITH CANCER OR BENIGN PAIN IN THE PAIN DEPARTMENT OF A TERTIARY HOSPITAL

Eleni Koraki[1], Varvara Apostologlou[2], Anna Gkouliava[3], Frideriki Sifaki[1], Polyxeni Zografidou[1], Eleni Arnaoutoglou[4]

1 Department of Anesthesiology, “Papageorgiou General Hospital” in Thessaloniki, Greece

2 Department of Anesthesiology, "G Papanikolaou" General Hospital in Thessaloniki, Greece

3Department of Anaesthesiology, Aristotle University of Thessaloniki, AHEPA Hospital, Thessaloniki, Greece

4Department of Anesthesiology, University of Thessaly, Larissa, Greece

Introduction

Neuropathic pain can greatly impact patients' quality of life since it is frequently not diagnosed in time. It also affects everyday activities of patients with symptoms such as anxiety and insomnia. The purpose of this study was to investigate the incidence of neuropathic pain in patients with benign or malignant pain in the Pain Department of a tertiary care hospital.

Methods

In this retrospective observational study, all patients who visited the Pain Clinic of G.N.Th. "C. Papanikolaou", from January 2017 until December 2022 were recorded. A total of 278 patients attending the Pain Clinic were included in the study.

Results

Of the 278 patients, 39.6% reported cancer pain. Low back pain was the leading cause of benign pain in the remaining 60.4% of patients. The most frequently observed pain characteristics in all patients were searing pain, pain with electrical features, and persistent pain. 66.5% of patients experienced neuropathic pain, and the most prevalent treatments were antidepressants, antiepileptic drugs, and interventional procedures that, according to the literature, appeared to reduce the occurrence of neuropathic pain. Treatment resulted in a significant decrease in pain scale scores ($p<0.001$). Burning pain and numbness are independent risk factors for neuropathic pain, however dull or acute pain lessens the chance ($p < 0.001$).

Conclusion

A large percentage of patients who come to Pain Clinics suffer from chronic neuropathic pain, of benign or malignant etiology. Patients with neuropathic pain who are treated in Pain Clinics with conservative (pharmaceutical) or invasive methods, find significant alleviation.

ADMINISTRATION OF IV LEVETIRACETAM FOR THE TREATMENT OF MIXED CANCER PAIN: A CASE REPORT

K. Ioannidis[1], A.Z. Douligeri[2], K. Sobat[1], D. Danassi[2], S. Poulopoulou[1]

[1] General Anticancer Oncological Hospital "Agios Savvas", Anesthesiology Department
[2] General Hospital of Athens “Laiko”, Anesthesiology Department

Background: Levetiracetam is a pyrrolidone derivative that is not chemically related to other antiepileptics. Unlike the antiepileptic drugs that are used for the treatment of neuropathic pain and are only available for oral administration, levetiracetam can also be administered IV. However, the evidence for its use in neuropathic pain conditions is poorly documented and contradictory.

Methods: A 64-year-old female patient was admitted to our hospital with symptoms of obstructive ileus. It was known that she suffered from colon cancer for which she had undergone exploratory laparotomy, and it was found that the disease was inoperable (“open-close” surgery), so she subsequently was submitted to 2 sessions of chemotherapy. In her emergency admission, she complained for severe pain (NRS: 8-9) in the abdomen and lumbar spine which extended to the lower extremity and manifested neuropathic features (DN4: 5/10). As the only option was IV administration of treatment, the following IV combination was decided: paracetamol 1g*3, tramadol 50mg*3, and levetiracetam 250mg*1 on the first day and afterwards 250mg*2.

Results: She reported pain relief (NRS: 3 at rest) and she underwent surgery-gastrostomy. Levetiracetam was continued until discharged, when the analgesic treatment was modified.

Conclusion: Levetiracetam is probably a useful option for IV administration when oral administration is contraindicated. Further designed studies are needed to investigate potential analgesic activity.

Bibliography:

1. Wiffen PJ et al. Levetiracetam for neuropathic pain in adults. Cochrane Database Syst Rev. 2014;7:CD010943.

2. Singh D et al. (January 02, 2023) Preemptive Levetiracetam Decreases Postoperative Pain: A Double-Blind, Randomised, Control Trial. Cureus 15(1): e33281.

MUSIC THERAPY IN PALLIATIVE CARE: A REVIEW OF THE LITERATURE

E. Kokkofiti, G. Nika, I. Vatsiou, A. Chatzis, A. Michou, L. Krissalis, A. Neratzi, M. Ntalouka, M. Bareka, E. Arnaoutoglou

Anesthesiology Department, Faculty of Medicine, School of Health Sciences, University of Thessaly. University Hospital of Larissa

Introduction: Music therapy, which has its roots in the ancient Greek tradition, heals ailments by using music as a therapeutic tool. Its goal is to promote psychosomatic balance, general restoration, and emotional expression. This systematic review aims to investigate how music works as a complementary therapy in palliative care.

Material and methods: A systematic search of electronic databases such as PubMed, Google Scholar, Science Direct, Medline and, Bamt was conducted in October 2023, using the keywords “music therapy”, “palliative care” and “chronic diseases”. The PRISMA technique was used to collect and analyze the studies.

Results: A total of 53 research studies were found that dealt with the therapeutic use of music as a complementary therapy in palliative care. After careful selection, 29 research articles were finally included in the review that emphasize the positive effects of music therapy in palliative care on specific health problems. Music therapy is proving to be an effective approach in palliative care that improves the quality of life of people in advanced stages of illness and their caregivers. Most studies relate to cancer patients who show significant pain relief.

Conclusion: Music therapy is proving to be a promising method in palliative care, contributing to pain relief and improving the quality of life of patients and their caregivers, especially in cancer patients. Despite conflicting study results, music in palliative care is proving to be encouraging and has a positive effect not only on patients but also on their caregivers. New studies are needed to investigate the optimal timing, duration and type of music therapy.

e-Posters Presentations

A CONTINUOUS INFUSION OF A MIXTURE OF NON-OPIOID AGENTS IN A SINGLE SYRINGE IN MORBIDLY OBESE PATIENTS: A CASE SERIES.

D. Ioannopoulos[1], St. Karathanasi[1], D. Tsitoura[1], G. Meimaris[2], Chr. Balakera[1]

1. General Hospital of Nikaia-Piraeus, "Ag. Panteleimon", Anaesthesiology Department, Piraeus, Greece

2. General Hospital of Nikaia-Piraeus, "Ag. Panteleimon, 1st Surgical Department, Piraeus, Greece

Background: Morbidly obese patients undergoing bariatric surgery is a growing global phenomenon in the context of the obesity epidemic, while their anaesthetic care can be really challenging due to their susceptibility of opioid-related side effects.

Case report: A 32-year-old male with a BMI of 45 kg/m², who is a smoker with hypothyroidism, and a 48-year-old female with a BMI of 51 kg/m² and bronchial asthma underwent elective sleeve gastrectomy procedures, lasting 100 and 135 minutes respectively. Before anaesthesia induction, a dose of 0.5μg/Kg of Dexmedetomidine was given in over 10 minutes along with preoxygenation. Induction of anaesthesia included a bolus dose of propofol 2.5mg/Kg of IBW and rocuronium 1mg/Kg of IBW, with sevoflurane used for maintenance. Immediately post-induction, dexmedetomidine, ketamine and lidocaine were added in a single 50ml syringe and a continuous infusion was started to achieve an infusion rate of 0.5μg/Kg/h, 0.5mg/Kg/h and 1mg/Kg/h respectively until the end of surgery. Additional adjuvants included dexamethasone 8mg, ondansetron 8mg and paracetamol 1gr. In the perioperative time, both patients maintained hemodynamic stability without adverse events. Neuromuscular blockade was reversed using sugammadex following the TOF stimulus. Both patients reported a VAS score ≤3 in the PACU.

Discussion: Dexmedetomidine, lidocaine and ketamine have profound analgesic properties while preserving patients' perioperative stability and facilitating postoperative recovery. The continuous perioperative infusion of the aforementioned agents minimizes reliance on opioids, mitigate the potential for opioid-related adverse events, particularly respiratory depression and may offer a novel avenue for anesthesiologists in pain management during laparoscopic sleeve gastrectomy. Implementing this approach in one syringe facilitates its efficiency and practicality as concurrent dosage adjustments can be achieved by infusion rate modulation, thereby allocating more time to address other intricate perioperative considerations.

References: Baek SY, Kim JW, Kim TW et al. Opioid-free anesthesia with a mixture of dexmedetomidine, ketamine, and lidocaine in one syringe for surgery in obese patients. J Int Med Res. 2020 Oct;48(10):300060520967830.

Conclusion: Continuous perioperative infusion of Dexmedetomidine, lidocaine and ketamine in a single syringe in laparoscopic sleeve gastrectomies for morbidly obese patients serves as an analgesic strategy to obviate opioid-related side effects.

NURSES' KNOWLEDGE AND ATTITUDES TOWARD PAIN IN GREECE

Dimitra Plakida[1], Ioulia Psouni[2], Evaggelia Haftoura[3]
1. Nurse, MSc, Department of Anaesthesiology, G.H. Volos, Greece
2. Nurse, Surgery Clinic, G.H. Rethymno, Greece
3. Anaesthesiologist, Department of Anaesthesiology, G.H. Volos, Greece

Introduction: Pain is an unpleasant experience, which can negatively affect patients' quality of life and also raise the cost of healthcare. Nurses can play an integral role with their knowledge and attitudes about assessing and managing pain as they are closer to the patient than other interdisciplinary team members.
Aim: The present study aims to investigate the knowledge and attitudes of nurses in Greece about pain and to identify the factors that affect their knowledge and attitudes.
Method: A Web search in Google Scholar and PubMed took place in January-February 2024 with keywords: pain, nurse, knowledge and attitudes. The criteria for exclusion of articles were relevant to the sample (nursing staff in hospitals in Greece) and the use of the questionnaire "KASRP" by Ferrell and McCaffery or a "KASRP" tool modified. Only five of the 150 articles found, were included in the study.
Results: The rate of incorrect responses on the "KARSRP" questionnaire reaches 50%, which reveals the lack of knowledge and negative attitudes of nurses in Greece regarding pain. The lack of knowledge and negative attitudes were identified, associated with pain assessment and use of analgesics, as well as the probability of respiratory depression, the likelihood of opioid addiction and non-drug intervention effectiveness. However, the highest educational level, continuing education, and previous personal experience of pain are associated with a higher score on the "KASRP" questionnaire.
Conclusions: Improving the level of pain knowledge of nurses in Greece and enhancing critical-thinking capabilities concerning knowledge use may improve pain care.

KEYWORDS

Pain, nurse, knowledge and attitudes

REFERENCES

1. Patiraki-Kourbani E, Tafas CA, McDonald DD, Papathanassoglou ED, Katsaragakis S, Lemonidou C. Personal and professional pain experiences and pain management knowledge among Greek nurses. Int J Nurs Stud. 2004;41(4):345-54
2. Patiraki E, Papathanassoglou E, Tafas C,Akarepi V, Katsaragakis S, KampitsiA, Lemonidou C. A randomized controlled trial of an educational intervention on Hellenic nursing staff's knowledge and attitudes on cancer pain management. European Journal of Oncology Nursing 2006;10:337–352
3. Konstanti Z, Gouva M, Mantzoukas S, Petridis A, Eftixidou E, Mavreas V, Damigos D. An exploratory study on nurses and doctors attitudes and knowledge of pain management in a Greek hospital. Interscientific Health Care 2010;2(1): 37-46

4. Kiekkas P, Gardeli P, Bakalis N, Stefanopoulos N, Adamopoulou K, Avdulla C, Tzourala G, Konstantinou E. Predictors of nurses' knowledge and attitudes toward postoperative pain in Greece. Pain Manag Nurs. 2015;16(1):2-10
5. Artopoulou I, Alikari B, ZYGA S. Assessment of nursing staff on knowledge about cancer pain. Archives of Hellenic Medicine 2015;32(5):604–613

TREATMENT OF HYPERALGESIA AND ADDICTION TO FENTANYL NASAL SPRAY DUE TO ABUSE IN A PATIENT WITH LUNG CANCER

Polyxeni Zografidou[1], Ofilia Papagiannopoulou[1], Maria Doumbaratzi[1], Marianthi Varveri[1], Eleni Koraki[1]

[1] Department of Anesthesiology, "Papageorgiou General Hospital of Thessaloniki", Greece

Introduction

Excessive opioid misuse has been related to both addiction and hyperalgesia, causing the patient to experience unmanageable pain while receiving an excessive amount of opioids.

Case report

A 55-year-old patient with lung cancer and bone metastases came to the Pain Department of our hospital because of uncontrollable pain. The patient had a 75 mcg fentanyl patch applied and received 400 mcg fentanyl nebulizer every 2-3 hours. Adjunctive medications were administered: oxycodone, pregabalin, and duloxetine and the dose of the fentanyl patch 100 mcg was increased. New instructions were given for proper use of the fentanyl nasal spray. The patient returned a month after receiving the instructions, taking overly large amounts of medication and experiencing significant pain. It was decided to place an epidural catheter to administer morphine, local anesthetic, dexamethasone as well as clonidine. The patient's pain was well controlled and the use of fentanyl nebulizer was reduced to 400mcg every six hours. The patient died two months after catheter placement.

Conclusions

The administration of immediate-release opioids requires precise instructions; otherwise, the patient could experience hyperalgesia and addiction. The use of epidural opioid administration can help to minimize opioid consumption as well as enhance pain management.

COMMUNICATION BETWEEN PERSONNEL OF PAIN MANAGEMENT UNIT ANDPATIENTS WITH CHRONIC PAIN

Chr. Nikolaidou[1], M. Kyritsa[1], Chr. Bizios[1], Ev. Papagianni1, M. Stamelaki1, Ath. Kolotoura[1]

[1]Pain Unit, G.N. Elefsina "Thriasio"

Introduction: With the shift in medicine from a disease-centered to a patient-centered approach, the communicative behaviors between healthcare personnel and patients seem to gain particular importance. These behaviors focus on ways of addressing chronic pain, as well as on practices that incorporate the human aspect of intersubjective experience.

Purpose: The investigation and illustration of the behaviors between health personnel and patients with chronic pain, aiming to achieve pain alleviation and a more effective provisionof health care and services.

Methodology: This research includes patients who are monitored at the Pain Management Unit of the Elefsina General Hospital for the last four years. It is carried out with the help of a semi-structured interview based on five main axes: tangible (focused on treatment) and/oremotional (oriented generally towards care) behavior, verbal and/or non-verbal behavior, behaviors that protect the individuality of the patient, high and/or low control behavior and the use of everyday and/or medical language.

Results – Conclusions: The initial results indicate a positive evaluation of the components related to tangible behavior, which is not separated from the socio-emotional behavior. There is a noted sensitivity to the non-verbal behavior of health personnel. Respect for the patient's individuality is highlighted, as a result of the therapeutic relationship and framework. High levels of control on the part of the physician are evident, which seem to confine communication into a paternalistic model of relationship - one that the patient also seeks and favors. Finally, the majority emphasizes the use of simple, everyday language as an important element in doctor-patient communication. An alteration between everyday and medical vocabulary during interaction is noted, but not mentioned by the patients.

The study has highlighted areas of high priority for effective communication between healthcare personnel and patients.

Bibliography

1. Douglas, W.M. & Heritage, J. (2005) Conversation analysis, doctor-patient interaction and medicalcommunication. Medical Education, 39: 428-435.
2. Rider, E.A., Hinrichs, M.M. & Lown, B.A. (2006) A model for communication skills assessmentacross the undergraduate curriculum. Med Teach, 28(5): 127-134.
3. Roter, D.L., Frankel, R.M., Hall, J.A. & Stuyter, D. (2006) The expression of emotion through nonverbal behavior in medical visits. Mechanisms and outcomes. J Gen Intern Med 21(1): 28-34.

4. Shutzberg, M. (2021). The Doctor as Parent, Partner, Provider… or Comrade? Distribution of Power in Past and Present Models of the Doctor–Patient Relationship. Health Care Analysis, 29(3),231–248. https://doi.org/10.1007/s10728-021-00432-2
5. Tramonti, F., Giorgi, F., & Fanali, A. (2021). Systems thinking and the biopsychosocial approach: Amultilevel framework for patient-centred care. Systems Research and Behavioral Science, 38(2),215–230. https://doi.org/10.1002/sres.2725

THE ROLE OF VAGUS NERVE STIMULATION IN THE TREATMENT OF CHRONIC PAIN

Thalis Asimakopoulos[1], Christina Orfanou[2], Maria Paximadi[3], Vasiliki Tsirtsiridou[1], Konstantina Tsouma[1], Irene Kouroukli[1]

1. Athens General Hospital "Hippokratio", Pain Clinic, Anesthesiology Department
2. 1st Department of Anesthesiology and Pain Therapy Clinic, Aretaieio Hospital, National and Kapodistrian University of Athens
3. General Hospital of Patras "Agios Andreas", Pain Clinic, Anesthesiology Department

Introduction: Vagus nerve stimulation (VNS) is a medical treatment that involves the delivery of electrical stimulation to the vagus nerve. VNS is already a recognized adjunctive treatment for refractory epilepsy and drug-resistant depression, and a growing number of studies in animal and clinical models support its efficacy in chronic painful syndromes. The purpose of this review is to present the technology and limitations of VNS.

Methods: A comprehensive review of the existing literature on vagus nerve stimulation and its application in chronic pain management was performed. Relevant basic research studies, clinical trials and systematic reviews were analyzed to understand the efficacy and safety of VNS.

Results: The analgesic effects of VNS are explained through its neuromodulatory actions on neural pathways, mediated by the vagus nerve, which end in pain perception brain areas, as well as through anti-inflammatory reflexes in response to stimulation. To date, both invasive and non-invasive (transcutaneous) devices for VNS have been developed. Most studies of VNS in chronic pain have been in primary headaches and chronic migraine, with particularly encouraging results. In addition, the use of VNS also looks promising in studies of patients with chronic visceral pain, fibromyalgia, rheumatic polymyalgia and systemic lupus erythematosus.

Conclusions: Vagus nerve stimulation emerges as a potential therapeutic option for chronic pain management, offering a new effective approach, particularly for chronic headaches. Further research and clinical trials are required to clarify its optimal parameters, long-term efficacy and potential as a stand-alone or adjunctive therapy for the management of chronic painful syndromes.

ULTRASOUND-GUIDED BOTULINUM TOXIN INJECTION FOR REPAIR OF A POSTOPERATIVE ABDOMINAL HERNIA

Polyxeni Zografidou[1], Ofilia Papagiannopoulou[1], Nikos Konstantinidis[2], Petros Mpaggeas[2], Marianthi Varveri[1], Eleni Koraki[1]

1 Department of Anesthesiology, "Papageorgiou General Hospital of Thessaloniki", Greece

2 First Department of Surgery, Medical School, Aristotle University of Thessaloniki, General Hospital Papageorgiou, Thessaloniki, Greece.

Introduction

In General surgery, the restoration of large abdominal hernias, postoperative or not, is not infrequently a challenge, mainly for the fear of recurrence. For this reason, various techniques have been described regarding their plastic restoration. The administration of botulinum toxin A to the fascia between the lateral abdominis muscle is one of the more recently used techniques and has gained favor in recent years. The toxin paralyzes the muscles of the lateral abdominal wall to increase tissue laxity, facilitating contraction of the rectus abdominis muscles and closure of the abdominal wall without tension.

Case report

A 71-year-old man presented for postoperative hernia repair. Due to multiple abdominal surgeries and due to the size of the hernia, the attending surgeon suggested the injection of botulinum toxin preoperatively, by an anesthetist, to facilitate the surgical field. Three weeks before the planned surgery, the patient came to our anesthesia department for the infusion. An intravenous catheter was placed as well as basic monitoring. With an ultrasound, the three walls of the abdominal wall were identified: external oblique, internal oblique and transversus abdominis, in exactly the same way as we apply to perform the transversus abdominis muscle block (TAP block). According to the literature, the injection is made at the height of the mid-axillary line in three points bilaterally. First point lies between the fascia of the external and internal oblique abdominis (above) and two points (middle and below) on the fascia between the internal oblique and transversus abdominis. We used a 90 mm ultrasound needle and 8 ml of 5 U/ml (40 units) botulinum toxin solution was administered at each injection site. No complications reported thought-out the procedure. Three weeks after the infusion, a smoothly closure of the abdominal wall was performed and the repair of the abdominal hernia was successful.

Conclusion

Ultrasound-guided regional anesthesia and the role of the anesthesiologist are constantly evolving. We report this case as a successful result of collaboration of different medical specialties and as a trigger for better outcomes of complex surgical patients.