



Abstract

Analgesia refers to the relief of pain without the loss of consciousness or sensation. Pain relief is something that is necessary in life, and it has many practical applications during and after surgery. There are various types of analgesics that are used to treat different kinds of pain, but they can fall into two major categories: anti-inflammatory drugs and opioids. When deciding on the best kind of analgesics to administer, specifics about the patient and the procedure must be considered. Overall, they play a crucial part in the medical field, although they have their risks and disadvantages as well.

Introduction

Pain remains a continuous and troubling part of everyday life. Thankfully, there are many ways to relieve it. Analgesia refers to the relief of pain without the loss of consciousness or sensation, and modern advancements in science have given it a practical use in many surgeries and other medical procedures. In contrast to anesthetics, analgesics may simply be referred to as pain relievers; they differ in that they do not induce sleep or render patients unable to move as anesthesia does.

There are various types of analgesics that are used to treat different kinds of pain, but they can fall into two major categories: anti-inflammatory drugs and opioids. The most familiar type of anti-inflammatory analgesics may be over-the-counter painkillers such as acetaminophen, which includes common brand names such as Tylenol and Nyquil, and ibuprofen, which includes Advil. Others may require prescriptions, and this is often due to a higher dosage of over-the-counter analgesics or a combination of multiple nonsteroidal anti-inflammatory drugs (NSAIDs). Although not addictive in nature, they may carry certain side-effects such as gastrointestinal irritation, ulcers, and liver toxicity (Teater, 2014). For these reasons, the use and wide distribution of several anti-inflammatory analgesics was limited when they were first created.

Most opioids, however, require a prescription. They function differently from anti-inflammatory analgesics in that they pose a higher risk of misuse, dependency, and addiction. Despite this, opioids have been used and identified as one of the only effective treatments for pain for thousands of years. It remains a well-known fact that they have a strong ability to relieve pain, and they've been commonly used to treat mental illnesses such as anxiety and depression as well. But, recent studies have actually shown that taking acetaminophen and ibuprofen together is more effective than using opioids (Kissin, 2013). Before diving into the negative effects that pain relief medications have generated in the current opioid epidemic, the benefits and useful applications that analgesics bring to the modern medical world will be discussed.

Regional Analgesia in Trauma

Regional analgesia refers to numbing a specific part of the body in order to relieve pain or allow for the execution of medical procedures. This proves to be effective for orthopedic trauma patients, as the use of regional analgesia reduces the chances of developing chronic pain and potentially misusing opioids as an alternative treatment (Cunningham et al, 2021). Trauma and the pain that comes with injuries stimulate a protective response in the body to initiate inflammatory, metabolic, and endocrine responses to relieve it. This means that without properly tending to the issue, whether it's acute or continued traumatic pain, there's a chance that this stress response will further develop into chronic pain (Fleming & Egeler, 2014). But, with regional analgesia opening the door for life-saving techniques and advancements, the body's natural responses can be altered to prevent this.

Rib fractures are the most common type of injury that result from trauma to the chest, and they often lead to severe pain and failed respiratory function. If they are left poorly treated, they can result in complications such as pneumonia and acute respiratory distress syndrome (Gadsden & Warlick, 2015). In addition to this, recent studies indicate that rib fractures are associated with chronic pain, disability, and an impaired quality of life that goes beyond the injury itself (Heindel et al, 2022). The goal of regional analgesia in this case is to minimize respiratory depression and reduce any possible side effects, though the specific type of treatment depends from patient to patient due to different anatomical positions of rib fractures.

When deciding on the best method to treat acute orthopedic trauma pain, several factors have to be considered. For reference, the fracture location, tissue involvement, and operative fixation have notable effects on pain intensity, and trauma to the bone and soft tissue is often associated with increased inflammation and pain patterns (Cunningham et al, 2021). Elective surgeries that are paired with regional analgesia have been able to reduce opioid consumption and postoperative pain, although other surgical approaches require a discussion between the surgeon and anesthesiologist about the potential risks and benefits.



Every patient will have a different fracture pattern, leading to different operation details and potential postoperative concerns (Gessner et al, 2020).

Analgesia During Childbirth

The use of pain relievers during childbirth has a long history of controversy and social movements surrounding it. The reason behind these disputes ultimately comes down to the fact that every woman has a different experience of childbirth, which includes not only the physical pain but the psychosocial, emotional, cultural, and sensory factors as well. Often, the methods that healthcare professionals use to measure and treat this pain do not take these other elements into consideration (Caton, 2015). Some may want to cope with the pain associated with labor because of the meaning they assign to the experience. However, over the past 50 years of advancements in obstetric anesthesia and analgesia, women have been able to choose from a range of options including neuraxial analgesia, nitrous oxide, systemic opioids, and nonpharmacologic methods (Gibson, 2021).

Since anesthetics were first introduced, there have been debates surrounding who should have access to pain relief in which particular cases. Some argued that it was only necessary when the practitioners were inflicting pain, as such is the case during instrumental delivery. There were also those who believed that the natural pain associated with childbirth shouldn't be relieved at all, and others suggested that any pain should be alleviated if there's a way to do so (Pernick, 1985).

During the first wave of feminism in the early 1900s, many women began demanding for their right to have a pain-free birth. In these early times, women could be compared to children and the insane in the sense that they were thought to be incapable of exercising bodily autonomy. However, during the second wave of feminism in the 1960s and 1970s, the movement fighting for women's reproductive rights took off. This ultimately helped in creating more humane childbirth practices that took their pain into consideration (Nichols, 2000). By the third wave, more women were acting on their right to use neuraxial analgesia during the birthing process, which allows for them to remain conscious during childbirth. This continues to be the most common form of pain relief used during labor, and between 1981 and 1997, the use of neuraxial analgesia during childbirth increased from 22% to 66% of births in the busiest hospitals of the United States (Camann, 2014).

Multimodal Analgesia

The perioperative period of a procedure refers to the time surrounding the surgery, which includes the preoperative, operative, and postoperative periods. Perioperative pain management is intertwined with anesthesia and analgesia, and the discussion of which types of drugs and methods are the most effective is an ongoing one.

Because it is common for moderate to severe pain to persist after surgery, some sort of postoperative analgesia is crucial to both relieve the short-term effects and prevent the onset of long-term chronic pain. If administered inadequately, some complications that may arise include decreased patient satisfaction, delayed postoperative mobilization, a higher chance of experiencing cardiac and pulmonary issues, and increased morbidity and mortality (Gerbershagen et al, 2013). In fact, 30% to 80% of patients continue to report pain even after relatively minor procedures (Meissner & Zaslansky, 2019). So, what can be done to prevent this?

Since relying on opioids for perioperative and postoperative pain leads to a higher chance of developing opioid dependence and hyperalgesia (increased sensitivity and responsiveness to pain), multimodal analgesia turns out to be a better alternative. This refers to the balanced use of low to moderate doses of nonopioids, and this is meant to maximize analgesic activity by targeting different pathways in the nociceptive system and attacking pain from several sides. Since it's also currently difficult to administer opioid-free anesthesia on a large scale, a multimodal analgesic approach helps to limit opioid usage to the minimum dose and time required, ultimately minimizing the risk of any side effects (O'Neill & Lirk, 2022).

One advantage of multimodal analgesia is that the combination of several drugs allows for lower doses of each individual one, thus reducing the adverse effects that may come with high doses of each drug while still being effective in treating pain. The American Society of Anesthesiologists (ASA), the American Pain Society (APS) and the American Society of Regional Anesthesia and Pain Medicine (ASRA) have each strongly recommended using multimodal analgesia to relieve perioperative pain, and it is now considered the standard for surgical patients (Ladha et al, 2016). Orthopedic surgery, which is generally one of the most painful types of surgical procedures, has also been applying multimodal analgesia for at least a decade considering that it leads to better analgesic outcomes in this specific type of surgery (Halawi, 2015).

Although the specifics of a multimodal analgesic approach will differ depending on the procedure and patient, there is a typical outline when generating a plan. Given that there are no contraindications, acetaminophen and either a NSAID or cyclo-oxygenase-2 inhibitor are the baseline drugs that should be used. The next things to be considered are adjuvants, such as dexamethasone, gabapentinoids, ketamine, and alpha-2-agonists. They each have advantages and disadvantages depending on what is being treated; for instance, alpha-2-agonists can be especially helpful for anxious patients.

Opioid Misuse

Although analgesics provide many advantages and applications to the medical world, it's important to discuss the negative effects as well. The use of prescription opioids has increased over the past 20 years in North America, and with that, so have the overdoses, poisonings, and deaths caused by both prescription and illegal use (Public Health Agency of Canada, 2020). Opioid misuse also poses more of a risk among specific populations. This includes people with lower incomes or periods of employment instability, as well as Indigenous people. The reason behind this lies in inequalities in the socioeconomic determinants of health and racially discriminatory health services (Phillips-Beck et al, 2020). Indigenous people have also been historically undertreated and subjected to poor quality treatment, which has resulted in trauma and increased susceptibility to disabling pain.

Administrative health data has also shown an increasing trend of opioid-related poisoning among people aged 15 to 24 (Canadian Institute for Health Information, 2016). This alarming opioid crisis resulted in Canada enacting new guidelines concerning opioid-prescribing in 2017. These guidelines sought to minimize exposure to opioid prescriptions and instead opt for alternative pain treatments that would reduce future harm. But, experts claim that these efforts will unlikely resolve all harm-related issues for people who are currently experiencing chronic pain and using opioids as a form of pain relief (Furlan & Williamson, 2017).

Conclusion

In the context of analgesics being used to aid in surgeries as well as everyday life, they have a notable impact. There are various types of drugs, whether anti-inflammatory or opioids, that can assist in treating different kinds of pain and preventing chronic pain. They have a long history of debate and controversy as well, and it is still unclear in some situations what the most appropriate analgesic approach would be. Overall, astounding advancements in science have been made that allow for analgesia to play a significant and necessary part in many procedures.

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