Spectrum Journal of Innovation, Reforms and Development
Volume 21, November, 2023 | ISSN (E): 2751-1731
Website: www.sjird.journalspark.org

RELEVANCE OF ANESTHESIA FOR MINOR SURGERY

1 I. B. Xayitov.,
2 N. M. Malikov.
1 - Associate Professor of the Department of Surgical Diseases in Family Medicine, Tashkent Medical Academy

2 - Assistant, Department of General Surgery No. 2, Tashkent Medical Academy

Abstract
Adequate pain management is one of the main tasks of outpatient surgery and includes intraoperative anesthesia, postoperative pain reduction and chronic pain management. General anesthesia is not possible in outpatient surgery settings. Analgesia is necessary in postoperative period and in patients with non-surgical pathology. Analgesic effect of various drugs is related to direct analgesia, decreasing of inflammation and tissue edema or indirect influence on pain syndrome.
Narcotic analgesics include opium derivatives and drugs (morphine, promedol), Their mechanism of action is mediated through opioid receptors on the cellular or systemic level. Non-narcotic analgesics include nonsteroidal anti-inflammatory drugs (NSAIDs). Ketorolac, nonselective inhibitor of cyclooxygenase and prostaglandins synthesis, has the strongest analgesic effect. Ketorolac efficacy is comparable to narcotic analgesics, but it does not cause respiratory depression and drug dependence, has no sedative and anxiolytic effects.

Keywords: ambulatory surgery, anesthesia, analgesics, ketorolac.

Introduction

Outpatient care is the primary care for most patients, including those with surgical diseases. One of the main tasks solved by the surgeon on an outpatient basis is adequate anesthesia. In a broad sense, "outpatient pain management" includes various types of anesthesia during surgery, methods to reduce pain syndrome in the postoperative period, as well as the fight against chronic pain syndrome in patients with various inflammatory, degenerative, and neoplastic diseases [1−3]. It should be noted that adequate pain relief is one of the key conditions for achieving a positive result in the treatment of patients, and the wide range of available analgesics allows ambulatory surgeons to successfully solve such problems.

Pathophysiological Aspects and Issues of Pain Classification

Pain is a complex and diverse concept in clinical and pathogenetic aspects. In a general sense, pain sensation is a part of the signaling system that warns the body about the occurrence of disorders and damages, which determines its leading role in the self-preservation of the body.

However, with long-term pathological processes or disorders of the central and peripheral nervous systems, pain can acquire features of the main process, becoming a manifestation of the disease[4]. A feature of pain is its close connection with the work of the central nervous system (CNS), where pain is analyzed and a response to a pain stimulus is developed. In this regard, the sensation of pain always has an emotional coloring, which gives it special features inherent in an individual. Depending on the duration of the sensation of pain and its significance for the body, pain is divided into acute and chronic [4]. Acute pain is a reaction of sensory systems to irritation or damage to superficial and deep tissues, internal organs, and smooth muscle dysfunction. The duration of the pain syndrome in this case is determined by the recovery time of the damaged structures. At the same time, acute pain can be superficial (when the skin, subcutaneous tissues and mucous membranes are damaged), deep (when the integrity of muscles, ligaments, joints and bones is violated), visceral (when pathological processes in internal organs are affected) and reflected (pain in certain peripheral areas when internal organs are affected) [4]. Chronic pain is a syndrome in which pain becomes pathological and becomes an independent disease. Chronic pain can be considered if it lasts more than 3 months, when the initiating pain factor ceases to work [5]. Based on the peculiarities of pathophysiological processes, a distinction is made between nociceptive and neuropathic pain [4].

Nociceptive pain occurs when pain receptors in tissues are damaged and afferent nerve fibers are excited. Nociceptive pain is most often acute, occurs under the influence of an obvious factor, has a clear localization and is described in detail by the patient. As a rule, this type of pain regresses quickly with the use of various painkillers in an adequate dosage. However, if nociceptive pain syndrome persists for a long time, features of chronic pain may appear [4, 5].

Neuropathic pain occurs as a result of damage or other changes in the central and peripheral nervous system. The variety of colors of neuropathic pain is due to its different manifestations depending on the level, extent, duration and nature of the damage to the nervous system. At the same time, the following clinical manifestations of neuropathic pain are distinguished: neuralgia (pain transmitted along one nerve trunk), dysesthesia (unusual, unpleasant sensations), hyperesthesia (increased reaction to touch), allodynia (pain reaction to a painless stimulus), hyperalgesia (increased reaction to a painful stimulus) [4].

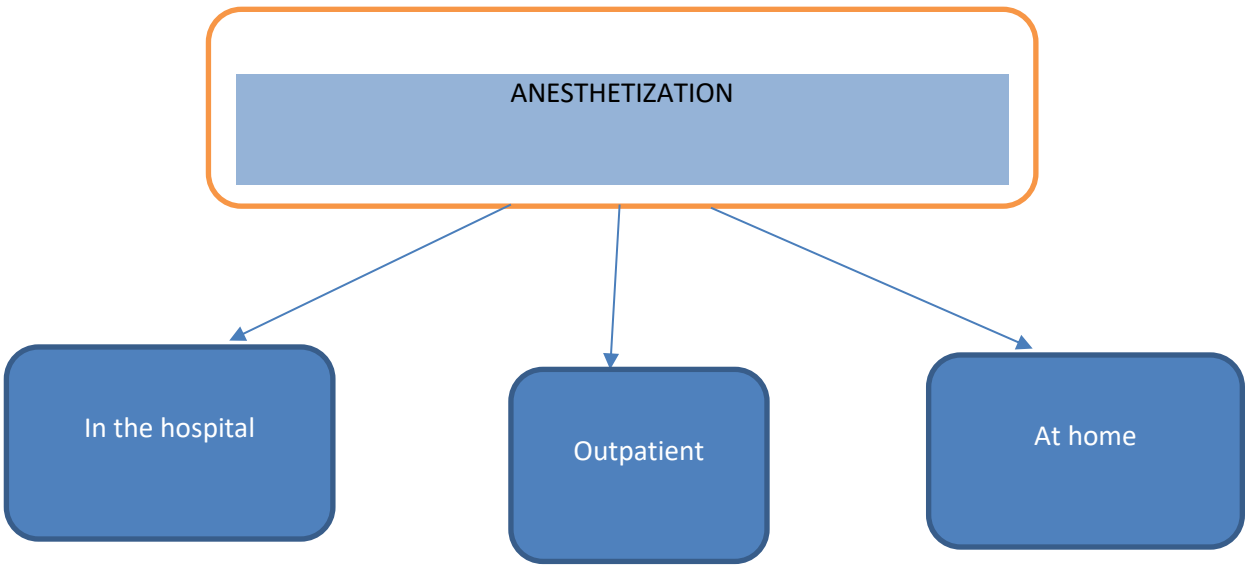
Methods of Pain Assessment

The study of the severity of the pain syndrome is necessary to assess the response of the body to the pain stimulus and the effectiveness of the painkillers used. Taking into account the individual peculiarities of the perception of pain syndrome in each patient, his subjective assessment is most often used to characterize pain. The most common methods of pain assessment include the Visual Analogue Scale (VAS), the Digital Scale, and various types of questionnaires. Regardless of the method used, the patient expresses the degree of his pain in the form of quantitative characteristics (centimeters when using VAS, points when using a digital scale and questionnaires), which are then calculated and analyzed [4]. Objective methods of pain study include the recording of evoked potentials

(somatosensory, visual, and modal), conditioned negative wave (assessment of the deviation of the electrical potential of the brain when exposed to two time-separated stimuli), nociceptive flexor reflex (recording the response when the peroneal nerve is stimulated), exteroceptive suppression of voluntary muscle activity (study of the activity of the masticatory or temporal muscles during electrical stimulation), and laser potentials (fixation of the cerebral potential in the vertex area when the skin of the upper extremities is stimulated with a pulsed infrared laser) [4].

Types of Pain Relief

Throughout history, man has been trying to find ways and means to reduce the intensity or get rid of pain. The use of such means is defined by the concept of "anesthesia". The types of anesthesia, depending on the purpose and conditions of its implementation, are presented in Figure 1.



Rice. 1. Types of Pain Relief

The main task of surgical anesthesia is to relieve the patient of pain during surgery. Surgical anesthesia is achieved by analgesia or anesthesia.

Analgesia is the attenuation or suppression of pain sensitivity through the use of drugs or other influences, without inhibition of other types of sensitivity and consciousness [3−5].

Depending on the method of conduction, anesthesia is divided into central anesthesia (administration of large doses of narcotic analgesics that induce narcotic sleep), ataralgesia (combined use of narcotic analgesics and tranquilizers), neuroleptanalgesia (combined administration of a narcotic analgesic and neuroleptic). Anesthesia is performed by various methods of intraoperative anesthesia using drugs of various pharmacological groups, leading to inhibition of all types of sensitivity [4].

Local anesthesia is characterized by the preservation of consciousness and spontaneous breathing, and is based on the use of drugs that block sensory nerve endings when they are

injected near the nerve trunk. Depending on the level of anesthetic administration, stem, plexus, paravertebral, spinal and epidural anesthesia are distinguished.

Various methods of general anesthesia (intravenous, inhalation, and insufflation) ensure the development of total myoplegia and require mechanical ventilation. A feature of surgical anesthesia in outpatient settings is the impossibility of using general methods of anesthesia, the presence of intensive care units or wards in the structure of a medical institution and the patient's return home after surgery, which excludes medical control in the near future. postoperative period. Therefore, the main methods of pain suppression during surgery on an outpatient basis are various types of analgesia and local anesthesia with short-acting drugs (novocaine, lidocaine, etc.).

Despite this, the range of outpatient surgeries is quite wide, because in addition to providing emergency care for acute surgical diseases (Table 1) and injuries, outpatient surgeons are performing more and more elective surgeries (Table 2), which is associated with the introduction of the latest minimally invasive surgical techniques and modern anesthesia.

Table 1.

Some acute surgical diseases that can be treated on an outpatient basis

Area of Effect	**Disease**
Acute purulent soft tissue infection	Boil
	Superficial abscesses
	Hydradenite
	Whitlow
	Lymphangitis and lymphadenitis
Acute peripheral vascular disease	Thrombophlebitis of superficial veins
Inflammatory diseases of the rectum and perianal region	Hemorrhoidal thrombosis
	Inflammation of the epithelial coccygeal tract
	Superficial paraproctitis

Table 2. Some elective surgeries that can be performed on an outpatient basis

Area of Effect	**Disease**
Hernias of the anterior abdominal wall	Umbilical hernia
	Inguinal hernia
Benign soft tissue masses	Lipoma
	Fibroma
	Atheroma
Rectum and perianal region	Hemorrhoids
	Epithelial coccygeal tract
	Rectal fissure
	Genital warts
Peripheral vessels	Varicose veins of the lower extremities

Non-operative anesthesia in polyclinics is necessary in the postoperative period, as well as in patients with non-surgical pathology, and is carried out by the same pharmacological and

non-pharmacological methods as in the hospital. However, it is necessary to take into account the short-term stay of the patient in the outpatient clinic and the lack of monitoring at home, which limits the use of strong painkillers, including narcotic drugs [5].

Pharmacological methods of pain relief

The analgesic effect of various drugs is associated with a direct analgesic effect, a decrease in the manifestations of the inflammatory response, a decrease in tissue edema, or an indirect effect on the pain syndrome. All pharmacological agents that affect the severity of pain syndrome are divided into anesthetics and analgesics. To the group of anesthetics These include drugs that inhibit the sensitivity of peripheral nerve endings (under local anesthesia) or lead to general anesthesia due to central influence (under general anesthesia) [6].

Analgesics are medications that suppress pain sensitivity. They are divided into narcotic and non-narcotic drugs [6]. Narcotic analgesics include opium preparations, its alkaloids and their synthetic derivatives (morphine, promedol). Their mechanism of action is related to their effect on opioid receptors at the cellular or systemic levels. At the cellular level, narcotic analgesics act similarly to endogenous endorphins and enkephalins by stimulating opioid Receptors. The systemic level of influence is associated with an increase in the excitability threshold of the cells of the nociceptive system located in the nuclei of the thalamus [6].

Non-narcotic analgesics are represented by a large group of nonsteroidal anti-inflammatory drugs (NSAIDs), which, in addition to analgesics, have anti-inflammatory and antipyretic effects [6, 7].

The analgesic effect of NSAIDs is related to the central (impaired conduction of pain impulses at the thalamus level) and peripheral (blocking the interaction of bradykinin with peripheral nociceptors) effects [8]. The anti-inflammatory effect of non-narcotic analgesics is due to the inhibition of the synthesis of prostaglandins and cyclooxygenases, which leads to a decrease in capillary permeability and exudation. The antipyretic effect of NSAIDs is due to the inhibition of pyrogenic effects prostaglandins on neurons of the hypothalamic thermoregulation and heat production center and inhibition of the synthesis of endogenous pyrogens (primarily interleukin-1).

Depending on the method of preparation, the following groups of NSAIDs are distinguished [6, 9]:

− derivatives of salicylic acid (acetylsalicylic acid), characterized by low toxicity, but a pronounced irritant effect on the gastrointestinal mucosa;

− pyrazolone derivatives (metamizole sodium, amidopyrine), which have a small breadth of therapeutic action and inhibit hematopoiesis during long-term use;

− para-aminophenol derivatives (phenacetin and paracetamol), which do not cause ulceration and do not inhibit kidney function, but have low anti-inflammatory activity;

− derivatives of indoleacetic acid (indomethacin, sulindac), which have maximum anti-inflammatory activity, but affect the central nervous system and can cause insomnia, agitation and convulsions;

− phenylacetic acid derivatives (diclofenac-sodium), which have a pronounced anti-inflammatory effect and minimally affect the gastric mucosa;
− propionic acid derivatives (ibuprofen), which have a pronounced anti-inflammatory effect;
− derivatives of phenamic acid (mefenamic acid), which are used as a remedy with a pronounced analgesic and antipyretic effect, but often cause gastrointestinal adverse events (diarrhea);
− oxycams (piroxicam, xefocam), which are selective inhibitors of cyclooxygenase-2 and are characterized by a long duration of action and good penetration into the tissues affected by the inflammatory process;
− alcanons (nabumetone), which affect the synthesis of prostaglandins;
− derivatives of sulfonanides (nimesulide), which selectively inhibit cyclooxygenase-2 and have anti-inflammatory, analgesic and antipyretic effects.

Among all groups of NSAIDs, pyrolysine carboxylic acid derivatives have the most pronounced analgesic effect, in particular ketorolac, the action of which is associated with non-selective inhibition of cyclooxygenase activity in peripheral tissues and inhibition of prostaglandin synthesis. The analgesic effect of ketorolac is comparable to that of narcotic analgesics, but it does not affect opioid receptors, and therefore does not depress respiration, does not have a sedative and anxiolytic effect, and does not cause drug dependence.

A number of drugs belonging to such pharmacological groups as corticosteroids and antispasmodics also have an analgesic effect. The analgesic effect of corticosteroids is due to their anti-inflammatory effect when applied locally. Antispasmodics have an analgesic effect if the pain syndrome has developed against the background of spasm of the smooth muscles of internal organs and tissues.

One of the important characteristics of an analgesic drug is the route of administration into the body [4, 6]:

–oral;
–transrectal;
–Sublingual and transbuccal
–transcutaneous;
–inhalation;
–subcutaneous;
–intravenous;
–intramuscular;
–spinal and epidural.

Different routes of administration make it possible to expand the range of application of analgesics. Gels containing NSAIDs (e.g., Ketorol) can reduce pain and inflammation when applied topically in patients with thrombophlebitis of the saphenous veins of the upper and lower extremities and other inflammatory diseases of the skin, subcutaneous fat. Tablet and intramuscular forms of ketorolac (Ketorol) are slightly inferior to narcotic analgesics in terms of analgesic effect and are used for anesthesia in patients in the postoperative period in the inpatient and outpatient settings, with severe chronic pain syndrome associated with

peripheral nerve damage or oncological process. Intravenous ketorolac is used to relieve pain in a short time, as well as as a premedication before performing any surgical procedures. The pronounced analgesic effect of ketorolac, the absence of the risk of drug dependence, and various forms of the drug determine its widespread use for pain relief in outpatient practice.

References

1. Ovechkin A.M. Postoperative Pain: State of the Problem and Modern Trends of Postoperative Pain Relief. 2015. Vol. IX, No. 2. Pp. 29–39.
2. Maier C., Nestler N., Richter H. The quality of postoperative pain management in German hospitals // Dtsch. Arstebl. Int. 2010. Vol. 107. P. 607–614.
3. Fletcher D., Stamer U.M., Pogatzki-Zahn E. Chronic postsurgical pain in Europe: An observational study // Eur. J. Anaesthesiol. 2015. Oct. Vol. 32(10). P. 725–734.
4. Khalikova E.Y. Neuropathic Pain as a Component of Acute and Chronic Postoperative and Posttraumatic Pain: From Diagnosis to Rational Pharmacotherapy. 2014. S. 38–42.
5. Kampe S., Geismann B., Weinreich G. The Influence of Type of Anesthesia, Perioperative Pain, and Preoperative Health Status on Chronic Pain Six Months After Thoracotomy-A Prospective Cohort Study // Pain Med. 2016. Sep 20. P. 149–158.
6. Avanesyants E.M., Tsepunov B.V., Frantsuzov M.M. Posobiye po khirurgii [Manual of surgery]. Moscow, ANMI Publ., 2002 [Avanes'janc Je. M., Cepunov V. V., Francuzov M. M. Posobie po hirurgii. M.: ANMI, 2002 [(in Russian)].
7. Beloborodov V.A. Polyclinic surgery. Krasnoyarsk: Type32, 2009. 208 p. [Beloborodov V.A. Poliklinicheskaja hirurgija. Krasnojarsk: Tip32, 2009. 208 s. (in Russian)].
8. Obrein C., McLellan A. Myths about treatment of aadiction // Lancet. 1996. Vol.1347(237). P. 40.
9. Werawatganon T., Charuluxanum S. Patient-controlled intravenous opioid analgesia versus continuos epidural analgesia for pain after intra-abdominal surgery // The Cochrane Database of Systemic Reviews. 2004. Issue 3, Art. No: CD004088.