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Anesthetics Used In Therapeutic Dentistry

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Annotation: Effective local anesthesia is the basis for pain control in endodontics and therapeutic dentistry. Regardless of the doctor's skills, treatment and management of the patient are difficult or impossible without effective anesthesia. This chapter discusses the pharmacological properties of local anesthetics, the comparative advantages and limitations of various anesthetics and how they are administered. Other chapters of this article provide information on the use of local anesthetics in the diagnosis and treatment of patients with urgent conditions

Key words: anesthetics, therapeutic dentistry, diagnosis and treatment, patient, pharmacological properties, control.

The fears associated with pain during dental treatment and extraction are due to the fact that there were no high-quality anesthetic drugs before. But today, almost all dental clinics use a new generation of local anesthetics. Modern drugs make it possible to completely eliminate pain not only during the main operation, but even at the time of their administration.

Anesthesia is called the absolute disappearance or partial decrease in sensitivity in the entire body or its individual parts. This effect is achieved by introducing special drugs into the patient's body that block the transmission of pain impulses from the area of intervention to the brain.

According to the principle of influence on the psyche, there are two main types of anesthesia:

Local anesthesia, in which the patient is in a state of wakefulness, and loss of sensitivity occurs exclusively in the field of future medical manipulations.

General anesthesia (anesthesia). The patient is unconscious during the operation, the entire body is anesthetized and skeletal muscles are relaxed.

Depending on the method of injection of anesthetic into the body, injection and non-injection anesthesia are distinguished in dentistry. With the injection method, an anesthetic drug is administered by injection. It can be injected intravenously, into the soft tissues of the oral cavity, into bone or periosteum. In case of non-injection anesthesia, the anesthetic is administered by inhalation or applied to the surface of the mucous membrane.

General anesthesia in dentistry. General anesthesia is called a complete loss of sensitivity of nerve fibers, accompanied by a violation of consciousness. In dentistry, anesthesia for dental treatment is used less often than local anesthesia. This is due not only to the small area of the surgical field, but also to a large number of contraindications and possible complications. General anesthesia can only be used in those dental clinics that have an anesthesiologist and intensive care equipment that may be required in case of emergency resuscitation.

General anesthesia in dentistry is necessary only for long-term complex maxillofacial operations – correction of the "cleft palate", multiple implantation, surgery after injury. Other indications for the use of general anesthesia:

- allergic reactions to local anesthetics;
- mental illnesses;
- panic fear of manipulation in the oral cavity.

General anesthesia contraindications:

- diseases of the respiratory system;
- pathologies of the cardiovascular system;
- intolerance to anesthetic drugs.

The supply of anesthetic can be carried out by injection or through inhalation. The most popular medicine among dentists for inhalation general anesthesia is nitrous oxide, known as laughing gas. With the help of an

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intravenous injection, the patient is immersed in a drug-induced sleep, for this purpose drugs that have a hypnotic, analgesic, muscle relaxant and sedative effect are used. The most common are:

- Ketamine.
- Propanidide.
- Hexenal.
- Sodium oxybutyrate.

Local anesthesia in dentistry. In dental treatment, local anesthesia is most in demand, aimed at blocking nerve impulses from the area of the surgical field. Local anesthetics have an analgesic effect, due to which the patient does not experience pain, but remains sensitive to touch and temperature.

The duration of anesthesia depends on how and how dentists anesthetize the surgical field. The maximum effect lasts for two hours.

Local anesthesia of the tooth before treatment Local anesthesia is used for the following manipulations:

- removal of cystic formations;
- turning under a bridge or crown;
- pin teeth extension;
- implantation of implants;
- cleaning channels;
- surgical treatment of gums;
- removal of carious tissues;
- extraction of teeth;
- excision of the hood over the wisdom tooth.

Depending on what area and for what time it is necessary to deprive sensitivity, the dentist selects the optimal technology, medicine and its concentration. The main methods of anesthetic administration are:

- infiltration;
- intraligmental;
- stem;
- intraosseous;
- application.

The infiltration method. It is used in dental practice and maxillofacial surgery. The advantage of the method is its rapid action, long-lasting analgesic effect, the possibility of repeated administration during prolonged surgery, rapid removal of the anesthetic from the body, deep analgesia of a large area of tissues. About eighty percent of dental interventions are performed under infiltration anesthesia.

The method is used for the following manipulations:

- infiltration anesthesia removal and treatment of teeth (mainly of the upper jaw row);
- opening and removal of purulent formations under the skin;
- extraction of a foreign body from the gum;
- treatment of complicated caries;
- suturing;
- tumor extraction;
- performing hernia repair.

The anesthetic drug is administered in layers, first under the mucous membrane at the tip of the tooth root, and then into deeper layers. The patient feels discomfort only at the first injection, the rest are completely painless.

There are two types of infiltration dental anesthesia – direct and diffuse. In the first case, the anesthetic injection site is anesthetized directly, in the second case, the analgesic effect extends to the nearest tissue areas. For local infiltration anesthesia in dentistry, the following drugs are used:

- Procaine.
- Lidocaine.
- Mepivacaine.
- Ultracaine

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- Trimecaine.

The intraligmental (intra-connective) method. It is a modern type of infiltration anesthesia. The dose of the injected anesthetic is minimal (does not exceed 0.06 ml), which makes it possible to treat and remove teeth in pregnant and lactating women.

The anesthetic is injected into the periodontal space using a special syringe and under high pressure. The number of injections depends on the number of roots in the tooth. Sensitivity to pain disappears instantly without causing a feeling of numbness, so the patient can speak freely and does not experience discomfort after surgery.

The limitations to the use of the method are:

The duration of the manipulation is more than 30 minutes.

Manipulations on the fangs. Due to anatomical features, it is not always possible to anesthetize them internally.

Inflammatory processes in the periodontium, periodontal pocket, flux.

The basal cyst of the tooth.

The intra-ligamentous method of anesthesia is the most painless and safe in dentistry, therefore it is often used in pediatric practice. The ease of implementation, painlessness, safety and high efficiency make the method popular among dentists. The cost of such a procedure is higher than infiltration, due to the high prices of injectors. The following drugs are used for intra-ligamentous anesthesia in dental treatment:

- Ultracaine.
- Trimecaine.
- Lidocaine.

The distinctive features of the stem analgesia method are the power and high duration of the effect. It is used during prolonged surgical operations and in situations where it is necessary to block sensitivity in the area of tissues of the entire lower or upper jaw.

Stem anesthesia. Indications for conduction anesthesia are:

- high intensity pain syndrome;
- neuralgia;
- removal of cystic formations;
- endodontic treatment;
- severe injuries to the jaw and zygomatic bone;
- curettage;
- complex tooth extraction.

The injection is injected into the area of the base of the skull, so that two jaw nerves can be blocked at once – both the upper and lower. The injection is performed by an anesthesiologist and exclusively in the hospital.

Unlike all other methods of local anesthesia, stem anesthesia does not affect nerve endings, but completely affects a nerve or a group of nerves. The time of anesthetic action is one and a half to two hours. Novocaine and Lidocaine are considered basic drugs, and more effective drugs are used in modern anesthesiology.

Application method (surface, terminal). It is used mainly in pediatric dental practice to deprive the sensitivity of the place where the anesthetic injection will be made, which ensures an absolute absence of pain. As an independent method, it is used in cases where it is necessary:

Application anesthesia to reduce the sensitivity of the hard tissues of the tooth;

- to remove a milk or pathologically mobile molar tooth;
- open a submucosal abscess of a small area;
- treat the mucous membrane for stomatitis and gingivitis;
- prepare the tooth for prosthetics;
- remove mineralized deposits in the cervical region.

For application anesthesia in dentistry, painkillers are used in the form of a spray, ointment, paste and gel. Most often, dentists use ten percent Lidocaine in an aerosol as an analgesic. The drug penetrates deep into tissues by 1-3 mm and blocks nerve endings. The effect lasts from a few minutes to half an hour.

Intraosseous (spongy) method. It is used for anesthesia of the lower molars, during extirpation of which infiltration and conduction anesthesia are ineffective. Instantly eliminates the sensitivity of one tooth and the

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adjacent gum area. The advantage of the method in the field of dentistry is strong anesthesia at low doses of the drug.

Classical intraosseous anesthesia has not been widely used in anesthesiology, due to the complexity of its implementation and traumatism.

The essence of the method is to inject an anesthetic into the spongy layer of the jaw bone between the roots of the teeth. Infiltration anesthesia is pre-performed. After numbness of the gums, the mucous membrane is dissected and the cortical plate of the bone is trepanated with the help of a drill. The boron is buried into the spongy tissue of the interdental septum by 2 mm, after which a needle with an anesthetic is inserted into the formed channel.

Contraindications to local anesthesia. Before prescribing local anesthesia to the patient, the dentist is obliged to find out if there are any contraindications to its implementation. The doctor should take special precautions when prescribing anesthesia to children and expectant mothers.

Contraindications to local anesthesia are:

- allergic reactions to drugs in the anamnesis;
- diseases of the cardiovascular system;
- suffered a stroke or heart attack less than six months ago;
- diabetes mellitus;
- hormonal disorders and pathologies of the endocrine system.

Modern anesthetics (painkillers) in dentistry. With the advent of local anesthetics and new generation technologies, the usual Novocaine in the field of dentistry is almost not used, especially other large cities. Despite possible complications and a high percentage of allergic reactions, lidocaine remains the main local anesthetic in regional clinics.

When visiting the clinic, you need to provide the attending physician with a complete and reliable medical history so that he can eliminate all risks and choose the right drug. Most dental clinics use carpule technology for the administration of anesthetics, which consists in the fact that the active substance is contained in a special disposable capsule, which, without opening manually, is inserted into a syringe. The dose of the drug in the capsule is designed for one injection.

What kind of anesthesia dentists use depends not only on the degree of painlessness of medical intervention, but also on the list of consequences that will have to be faced after surgery. Modern remedies minimize the risks associated with incorrect administration of the drug, incorrect dosage and the occurrence of allergic reactions to the anesthetic.

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