



PERSONALIZATION AND PREVENTATIVE PREMEDICATION: USED DRUGS VALUE AND EFFICIENCY

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Summary

The review discusses methods for ensuring the main tasks of various groups of pharmacological agents as part of the premedication, their positive and negative sides. Operating stress is a state of polyfunctional changes that occur in the patient's body under the influence of aggressive factors of surgical intervention. The functions of the central nervous system, endocrine system, blood circulation and respiration, liver and kidneys, immunity and metabolism are changing.

Keywords: premedication, Psycho- emotional level, anxiolytics, literature review.

Introduction

Known premedication before operative gynecological interventions performed under general and regional anesthesia, based on parenteral administration of sedatives, ensuring the psychoemotional state of the patient, and drugs for the prevention of postoperative pain syndrome ("proactive analgesia"). Usually, before surgery, the patient experiences an anxious state. Anxiety is a normal protective reaction that allows the body to adapt to conditions of increased danger. The degree of anxiety varies and depends on the psycho-emotional characteristics of the organism of women with climacteric syndrome. This condition leads to psychological stress, which is manifested by insomnia, fatigue, irritability, fear, a rush of heat.

Psychological adaptive abilities decrease in patients with a high degree of anxiety, which leads to a high operational risk and further to a difficult postoperative period[19]. To relieve anxiety before surgery and anesthesia, premedication is a





mandatory treatment aid [26]. Premedication (from lat. pre - before; lat. medicamentum – medicine) - preliminary medical preparation of the patient for general anesthesia and surgical intervention. The purpose of this training is 1) prevention of preoperative operational stress; 2) achievement of neurovegetative stabilization; 3) decrease of reaction to external stimuli; 4) reduction of gland secretion; 5) creation of optimal conditions for the manifestation of the action of general anesthetics; 6) prevention of allergic reactions in response to the use of medications and infusion media during anesthesia. Premedication is performed by a combination of drugs and in most cases includes a narcotic analgesic, sedative and antihistamine.

Premedication most often consists of two stages. In the evening, on the eve of the operation, sleeping pills are prescribed inside in combination with tranquilizers and antihistamines. Particularly excitable patients, these drugs are repeated 2 hours before surgery. In addition, anticholinergics and analgesics are usually administered to all patients 30-40 minutes before surgery. If cholinergic drugs are not included in the anesthesia plan, then the appointment of atropine before surgery can be neglected, however, the anesthesiologist should always be able to administer it during anesthesia. It should be remembered that if it is planned to use cholinergic drugs (succinylcholine, foran) or instrumental irritation of the respiratory tract (tracheal intubation, bronchoscopy) during anesthesia, then there is a risk of bradycardia with a possible decrease in blood pressure and the development of more serious cardiac arrhythmias. In this case, the appointment of premedication of anticholinergic drugs (atropine, metacin, glycopyrrolate, hyoscine) to block vagal reflexes [1,4,6].

Premedication may not always be adequate, depending on the tactics of its implementation, taking into account many factors and protective and adaptive mechanisms of the body.

Inadequate premedication does not relieve the existing psycho-emotional stress and negatively affects the postoperative period, leading to various complications that may appear even after the cure of the underlying disease or the healing of the surgical wound [1]. According to a number of authors, it is necessary to divide premedications into therapeutic and preventive, which in turn are divided into individualized, proactive, etc. According to the generally accepted opinion, therapeutic premedication is carried out in order to correct impaired vital functions of the body before surgery, and preventive causes the prevention of complications that may occur during surgery and anesthesia [11,15]. To determine the tactical orientation of premedication, dosages and drugs, it is necessary to identify the existing pathology, as well as to assess the level of anxiety of the body. And here it should be recognized





that, despite a large number of works, the problem of studying the individual mental assessment of patients with menopausal syndrome before gynecological surgery remains relevant.

To this end, the authors mainly used various scales for assessing the psycho-emotional state of the body, determined the stress index of regulatory systems based on the method of variational pulsometry [5,13,14], used an integrative anxiety test as a criterion for the level of adaptation [5,16], studied neurovegetative, respiratory and hemodynamic indicators [15,16], assessed the psycho-emotional state of patients and its manifestations. The conducted studies allowed us to establish that the syndrome of psychoemotional tension manifests itself in various degrees of tension - from a feeling of discomfort to a neurotic breakdown [2,4,5]. These states can be graded into various types of mental reactions.

When determining the psychoemotional state of a patient according to clinical signs, 5 types of reactions are distinguished (according to A. F. Bizyaev): asthenic, depressive, anxious, hypochondriac, hysterical.

1. Asthenic reaction is characterized by vegetative lability, headaches, fatigue, irritability, tearfulness.
2. Due to depressive reaction, there is a depressed mood, a low voice, lack of confidence in the success of treatment, the patient is laconic.
3. The anxiety reaction is manifested by anxiety, excitement, fear, fear for an unsuccessful outcome, poor sleep, increased pulse.
4. With a hypochondriac reaction, the patient presents many complaints, details them, describes sensations and events in chronological order in detail, is willingly examined; a discrepancy is found between the abundance of complaints and the determined pathological changes.
5. Hysterical are vegetative reactions (lump in the throat, lack of air, tremor of the fingers, red spots on the skin of the face and neck). In the behavior of such patients, demonstrativeness, theatricality, the desire to attract attention to themselves, to arouse sympathy are noted. The latter are more common in women.

In-depth analysis revealed that psychoemotional stress can be divided, depending on the level of involvement of the central nervous system into central (difficulties in concentration and control of consciousness over external manifestations of emotions) and peripheral (increased muscle tension, increased vascular response). It has been established that the experience of patients before surgery is a classic variant of emotional stress, which affects the functioning of organs and systems of the body - cardiovascular, respiratory, urinary, endocrine and especially vegetative[14]. As can be seen from the above, psychological reactions in women with menopausal syndrome





are heterogeneous and different in severity, which requires an individual approach when prescribing premedication.

Therapeutic premedication consists in correcting the detected disorders on the part of various organs and systems of the body and is determined by an anesthesiologist together with a therapist, gynecologist and other specialists. More careful attention requires preventive, individualized and proactive premedication. Concepts such as standard, classical premedication should not take place in the vocabulary and actions of an anesthesiologist. Evaluating the effectiveness of preoperative preparation of patients with concomitant menopausal syndrome, it can be concluded that the use of low doses of estrogens (2 mg/day) for 5-7 days as a component of therapeutic premedication is advantageous. Providing a specific hormonal effect, estrogen therapy helps to stabilize psychoemotional disorders, as well as normalize the function of the cardiovascular system. All this reduces the preparation time of patients for surgery, leads to its favorable course and a decrease in the frequency of postoperative complications [10,15,17].

Preventive premedication. To fulfill the basic requirements of preventive premedication, neuroleptics, narcotic analgesics, holinoblocking and antihistamines in the form of universal drug regimens, hypnotics, psychotropic drugs are used. The most well-known are the following combinations of drugs: narcotic analgesic + vagolytic; narcotic analgesic + vagolytic + barbiturate; narcotic analgesic + vagolytic + small tranquilizer; large tranquilizer + vagolytic; narcotic analgesic + vagolytic + antihistamine + small tranquilizer [2]. The introduction of narcotic analgesics into premedication in order to reduce psychoemotional preoperative stress has already become generally accepted and necessary. The mechanism of action of this group of drugs is due to a decrease in the perception of pain impulses in the central nervous system, an increase in the threshold of pain sensation with the elimination of the destructive nature of pain [15]. At the same time, it was found that the use of only narcotic analgesics and antihistamines does not lead to a decrease in anxiety, to a decrease in the activation of the sympathetic nervous system, and the presence of negative effects of opioid analgesics forces the authors to search for drugs with increased respiratory safety [16]. As a psychotropic agent, droperidol is introduced into the premedication, causing the so-called neuroleptic syndrome, characterized by complete emotional calm, lack of active movements, indifference to events, vegetative stabilization [15]. As a psychotropic agent in the aspect of premedication, droperidol is significantly inferior to diazepam, because, despite clinically pronounced tranquilization and vegetative stabilization, it often causes mental discomfort, internal anxiety, irritability, bad





mood, lack of communication. In connection with the above, droperidol is not considered as an optimal psychotropic drug for premedication.

Benzodiazepine tranquilizers traditionally used for premedication have the necessary qualities to eliminate the symptoms of anxiety, fear, mild depressive disorders, sleep disorders (anxiolytic (Lat. *anxius* – anxiety and Greek. *lysis* – dissolution), sedative, hypnotic, muscle relaxant, anticonvulsant, vegetostabilizing effects) [13]. The drugs provide a full-fledged blockade of psychoemotional stress reactions due to the suppression of brain structures responsible for the regulation of emotions [12].

The sedative (calming) effect is associated with the effect of drugs on another type of benzodiazepine receptors localized in the reticular formation of the brain stem, nonspecific nuclei of the thalamus. This effect is most pronounced in phenazepam, diazepam, lorazepam, but little manifested in mesepam, midazolam. Moderate central, muscle relaxant effect of benzodiazepines is a positive property, as it reduces alertness, anxiety, helps to relieve nervous anxiety. Muscle relaxation is well expressed in diazepam-type drugs - sibazone, seduxen [14].

The hypnotic effect of benzodiazepines causes the rapid onset of sleep, increases its duration and lengthens the effect of drugs that depress the central nervous system. Nitrazepam, diazepam, and phenazepam have the most pronounced hypnotic effect. Such unique properties make benzodiazepines the leading means of premedication. However, as clinical experience shows, the use of a single tranquilizer in premedication as the main drug blocking psychoemotional stress before surgery is not always justified [8].

The use of benzodiazepines is accompanied by the restoration of vegetative balance only in patients with low and medium levels of personal anxiety, while in patients with high levels of it against the background of chronic stress, the use of benzodiazepines disrupts the autonomic mechanisms of regulation of heart rhythm, reduces heart performance due to depletion of sympathetic activity [11].

The main pharmacological problem associated with the use of benzodiazepines is their ability to cause the development of addiction and withdrawal syndrome. In addition, conventional doses of benzodiazepines have either insufficient or excessive effect, accompanied by depression of consciousness, especially in elderly and weakened patients, which requires an individual approach to their use in premedication [8]. In order to increase the stress-limiting possibility of premedication, stabilization of vegetative homeostasis, the use of dalargin, as well as pharmacological analogues of inhibitory neurotransmitters of the central nervous system (taukard, felizon, phenibut) is recommended.



Individualized premedication. Individualization of premedication based on the study of psychological testing data is becoming a promising direction in the development of anesthesiology, since preoperative psychopathological conditions, depending on the type of personality, are different in their structure, external manifestations and severity of disorders. However, to date there are no comprehensive objective methods of examination of women with menopausal syndrome in the preoperative period, and the subjective and clinical criteria used cannot accurately reflect the body's responses. To assess preoperative emotional stress, a subjective assessment is often used according to a special gradation scale indicating the severity of vegetative reactions with an objective assessment using cardiointervalography [7].

Assessment of the quality of premedication also presents a certain problem. Adequate premedication is understood as a complex of therapeutic and preventive measures that normalizes psychoemotional status, increases reactivity and resistance to the upcoming surgical intervention [1,13]. The effectiveness of psychotropic therapy is evaluated using a special unified scoring system for evaluating the effect of psychotropic drugs with simultaneous mathematical analysis of the heart rate, based on the results of a ninhydrin test, while determining the amount of sweating, using a prognostic approach [11].

In order to determine the effectiveness of premedication, a score scale, a method for registering skin-galvanic reactions, measuring the amount of gas exchange before surgery (while increasing gas exchange by 10-12% is regarded as a sign of the presence of negative emotions), by changing somatosensory and auditory evoked potentials of the brain [9], a comparative assessment of the intensity of processes, changes in cortisol levels [5], a study of changes in blood circulation, determining the temperature difference in the oral cavity and the skin of the hand, corresponding to the severity of emotional reaction [14], methods of sensometry and sensography have been introduced, which reliably reveal sympathetic activation, determination of catecholamines, 11- and 17-oxycorticosteroids in blood serum [13], since there is a reliable correlation between the concentration of catecholamines in the blood serum of patients and the level of anxiety in the preoperative period.

Activation of the hormonal link of the sympathetic nervous system outside the operating trauma is regarded as a consequence of a general nonspecific reaction of the body to emotional stress before surgery, which cannot be completely stopped by premedication. Other researchers consider hypercatecholemia before the upcoming surgery necessary, able to compensate for future changes in





hemodynamics. At the same time, there are no studies determining the pathological level of corticosteroids in this situation [15].

Thus, the development of medical science and operational technologies requires modern anesthesiology to optimize adequate protection of women with menopausal syndrome already at the stage of premedication. The solution to this problem consists, based on the literature review, in several aspects:

a) preventive premedication based on an objective assessment of the preoperative psycho-emotional status of a particular patient (due to a certain type of mental reactions);

b) individual selection of drugs for premedication;

c) development and improvement of available objective criteria for its adequacy.

d) development of new drugs that do not differ in effectiveness from classical anxiolytics, but at the same time devoid of their disadvantages.

Summarizing the literature review, the following conclusions can be drawn. A number of controversial and contradictory judgments remain in determining the mechanisms and patterns of development of the preoperative psychoemotional state of patients with menopausal syndrome. There is still no consensus on an objective assessment of the preoperative psycho-emotional state of gynecological patients with menopausal syndrome, and the available classifications are based on one criterion – symptoms. Although there is a consensus among researchers on the need for individual (depending on the preoperative psycho-emotional status) premedication, the methods of evaluating its effectiveness are extremely contradictory and difficult to determine, and the interpretation remains controversial. The presence of a variety of drugs and their combinations for the purpose of premedication indicates insufficient effectiveness of preoperative protection of patients. The identified problems are relevant and are the subject of new research.

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