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CLINICAL PROTOCOLS OF DENTAL TREATMENT OF PATIENTS WITH CARDIOVASCULAR
DISEASES (REVIEW OF SCIENTIFIC RESEARCH)

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Abstract: There is an increased probability of the coexistence of cardiovascular diseases in dental clinic clients, especially in the older group, which is associated with the dominance of diseases such as hypertension and coronary heart disease in the general morbidity structure of the population. A key feature of managing the treatment of this category of patients is the increased risk of sudden development of emergency conditions against the background of dental procedures, even if the initial condition of the patient seemed satisfactory. Such patients are also at increased risk of specific dental complications, such as bleeding, which can be caused by both a sudden increase in blood pressure and prolonged use of anticoagulants or disaggregants. Modern clinical guidelines, based on data from major international studies and regularly updated, play an important role in ensuring that dentists prevent cardiovascular emergencies and provide the necessary first aid, which helps to minimize the negative consequences of such acute clinical episodes.

INTRODUCTION

The likelihood of cardiovascular disorders in dental patients, especially in older people, increases significantly. This is due to the fact that diseases such as arterial hypertension and coronary heart disease occupy leading positions in the spectrum of disease prevalence, including the territory of the Russian Federation. The key difficulty in treating such patients in dentistry lies in the high probability of unexpected development of urgent conditions requiring urgent medical intervention, even if the patient's initial condition was stable [5, 11, 23].

Acute clinical scenarios in patients with cardiac problems may be caused by an emotional reaction to the expectation of pain, reflex reactions during treatment, or an incorrect choice of anesthetics, many of which can provoke vascular spasms and exacerbate myocardial ischemia. Another important aspect is the increased risk of dental complications, such as bleeding, caused not only by sudden spikes in blood pressure, but also by prolonged use of certain medications, in particular oral anticoagulants and disaggregants [1, 4].

Among all cardiovascular diseases, hypertension is one of the most common, affecting on average every third or fourth adult. Most of these patients are unaware of their elevated blood pressure, as the disease often proceeds without pronounced symptoms and does not cause discomfort. Among those who are aware of their disease, almost half do not receive treatment, and of those who receive it, only in half of the cases blood pressure decreases to the required level. In general, this leads to the fact that effective control of hypertension is achieved only in 15-30% of patients [3, 8, 22]. Accordingly, most of these patients come to a dental appointment with high blood pressure, which can increase dramatically during the intervention, making a hypertensive crisis the most likely emergency condition in such cases.

In the context of preventing the development of a hypertensive crisis during a dental procedure, it is critically important to conduct a comprehensive collection of the patient's medical history, including detailed information on the presence of hypertension, the regularity of the use of antihypertensive drugs, their effectiveness and the frequency of hypertensive crises. It is fundamental to assess the baseline level of blood pressure (BP) before the start of medical intervention, as well as, if necessary, premedication. Special attention should be paid to ensuring adequate anesthesia using anesthetics that do not contain adrenaline, or with its minimum concentration. A hypertensive crisis is characterized by a sudden and significant increase in blood pressure above the patient's usual level, accompanied by specific clinical symptoms. The lack of adequate and timely reduction of blood pressure in patients with hypertensive crisis increases the risk of serious complications, especially from the side of cardiac and cerebral target organs. Therefore, first aid should be provided by a dentist immediately. It is important

to note that hypertensive crises are classified into complicated and uncomplicated, and approaches to the treatment of these conditions differ.

Uncomplicated hypertensive crisis often manifests itself through headache, dizziness, flashing "flies" in front of the eyes, nausea, tinnitus, palpitations, aching pains in the heart area, chills, single vomiting. Typically, blood pressure in such cases exceeds 140/90 mmHg, although the indicators may vary depending on the individual characteristics of the patient. It is recommended to reduce blood pressure by 15-20% of the initial level within an hour. A more significant change in blood pressure can be dangerous, since it can lead to insufficient blood supply to the heart and brain, which increases the risk of severe complications[3].

Oral medications are mainly used to relieve uncomplicated hypertensive crisis. Captopril (kapoten) at a dosage of 25 mg, taken orally or sublingually, is a standard remedy and is well tolerated by most patients. Alternatively, nifedipine (corinfar, cordaflex, fenidine) at a dose of 10 mg or clonidine (clofelin) 0.075 mg, also taken orally or sublingually, can be used. It should be borne in mind that nifedipine is not recommended for patients with tachycardia and may increase dizziness and nausea. Clonidine, which causes delayed reactions and dry mouth, should not be used in patients with cerebral symptoms. To enhance the effect of these drugs, you can take 20-40 mg of furosemide orally. With tachycardia over 100 beats per minute, beta-blockers such as bisoprolol (concor) at a dose of 5 mg or propranolol (anaprilin) 20 mg can be used.

The effectiveness of blood pressure reduction is assessed no earlier than 30-40 minutes after taking the drug. If blood pressure remains at the same level after this time, it is recommended to take the drug again in the same dosage. In case of severe symptoms of a hypertensive crisis or in the absence of a decrease in blood pressure within an hour, it is necessary to call an ambulance team. The decision to continue dental intervention after lowering blood pressure is made individually; it is optimal to postpone treatment the next day and advise the patient to take regular medications to control blood pressure [6, 19].

In the event of an angina attack characterized by pressing soreness in the chest area, dental treatment should be stopped immediately and short-acting forms of nitroglycerin, in particular, a tablet or an aerosol of nitroglycerin under the tongue, should be applied. If the angina attack does not subside within 5 minutes, it is necessary to measure blood pressure (BP). If the systolic blood pressure exceeds 100 mmHg, it is advisable to repeat the intake of nitroglycerin and call for emergency medical care.

Symptoms of acute myocardial infarction are manifested through a serious anginal attack with severe compressive pain behind the sternum, spreading to the left arm, under the shoulder blade, accompanied by shortness of breath and a feeling of fear. The pain persists for more than 10 minutes and is not completely relieved by nitroglycerin. In such a situation, an emergency medical call is mandatory, and it is also necessary to provide the patient with nitroglycerin or nitroglycerin aerosol under the tongue and provide 150-300 mg of aspirin and 300 mg of clopidogrel [7, 17, 18].

Survivors of myocardial infarction, regardless of the time of its occurrence, are at a significantly increased risk of sudden cardiac death [18]. For such patients, planned premedication with sedatives and a special selection of the anesthesia method is recommended, which should minimize pain and eliminate the risk of vasoconstriction. Patients with coronary heart disease (CHD) who have had an acute myocardial infarction or surgical revascularization less than a year ago are often on double antiplatelet therapy, which increases the likelihood of bleeding after surgery. In such patients, only emergency dental procedures should be performed, preferably in an inpatient setting, with the involvement of a cardiologist.

Cardiac arrhythmias can be manifested by an acceleration of the heart rate during a dental appointment, which is most often due to the emotional reaction of the patient. With tachycardia of less than 140 beats per minute, not accompanied by severe arterial hypertension, heart pain or shortness of breath, it is enough to eliminate the psychoemotional tension of the patient and conduct adequate anesthesia. Extrasystole, which is one of the most common arrhythmias, usually does not show significant clinical symptoms and does not require specific treatment. However, if frequent extrasystoles occur, which the patient may perceive as irregular heart contractions, it is recommended to postpone dental treatment and refer the patient to a therapist or cardiologist for consultation.

The development of paroxysmal cardiac arrhythmias, such as paroxysmal supraventricular tachycardia, can occur suddenly in people of different ages, including those who do not have established heart disease. With this disorder, the heart rate exceeds 140 beats per minute, and the patient may experience anxiety, weakness, dizziness and shortness of breath. At the same time, blood pressure may decrease, and the pulse becomes frequent and weakly filled. Prior to the arrival of an ambulance, the patient should begin conducting vagal tests, which may be effective for relieving paroxysmal supraventricular tachycardia. Examples of such tests are the Valsalva test, where the patient is asked to take a deep breath, hold his breath and strain, and reflexive effects, for example, pressing with a spatula on the root of the tongue to provoke a gag reflex. The Ashner test includes moderate, uniform pressure on the patient's eyeballs for up to 30 seconds [14, 15].

Atrial fibrillation, also known as atrial fibrillation, is common in the elderly. This rhythm disturbance can be both permanent and episodic. Patients are usually aware of the presence of this disorder when collecting anamnesis. Atrial fibrillation is one of the most dangerous forms of arrhythmia, which can lead to the development of thromboembolic complications and, with paroxysm, acute heart failure [13, 16]. In case of severe tachycardia in a patient with atrial fibrillation during a dental appointment, treatment should be stopped immediately. While an ambulance is expected to arrive and blood pressure is maintained, tableted beta-blockers such as bisoprolol (5-10 mg) or metoprolol (25-50 mg) can be used. Surgical dental procedures in patients with atrial fibrillation should be performed only after consultation with a cardiologist. It should also be noted that most patients with atrial fibrillation regularly take oral anticoagulants to prevent thromboembolism, which may increase the risk of bleeding. Therefore, it is necessary to discuss the possibility of temporary withdrawal of these drugs [12].

Acute development of left ventricular failure, manifested in the form of cardiac asthma or pulmonary edema, is a serious complication of cardiovascular diseases. Most often, it occurs against the background of a hypertensive crisis, tachyarrhythmias or acute coronary syndrome [10]. This condition can also occur during dental procedures in patients with chronic heart failure. The acute development of left ventricular failure is characterized by a rapid increase in severe shortness of breath and an attack of suffocation, frequent noisy breathing, sometimes with bubbling wheezes audible from a distance. Patients are pale, the skin is moist, cyanosis and the appearance of pink foamy sputum are possible. In such cases, an immediate ambulance call is required. The patient should be provided with a semi-sitting position with lowered legs in order to avoid increased blood flow to the left ventricle and exacerbation of pulmonary edema. If possible, oxygen inhalation should be performed. First aid includes the use of short-acting nitrates (1-2 tablets of nitroglycerin or 1-2 drops of nitroglycerin aerosol under the tongue) and intravenous administration of loop diuretics, for example, furosemide at a dose of 40-80 mg [17]. Acute vascular insufficiency, manifested in the form of fainting, is one of the most common emergency conditions in dental practice. Fainting can occur in physically healthy people of different ages and can be caused by various factors such as emotional stress, pain, the sight of blood, prolonged standing upright or hunger. In addition, syncopal conditions may be associated with organic diseases of the heart or central nervous system and may serve as signs of cardiac rhythm and conduction disorders, heart defects, cardiomyopathies or epilepsy.

Fainting is characterized as a temporary loss of consciousness, preceded usually by symptoms including weakness, dizziness, and tinnitus. Clinically, this condition is manifested by pallor of the skin, relaxation

of skeletal muscles and is sometimes accompanied by short-term convulsive movements. The patient's blood pressure is usually reduced, the pulse is weakly filled, the pupils are narrowed, but the reaction to light remains [9, 20].

In case of fainting, it is recommended to lay the patient so that his legs are raised, providing fresh air and relaxing the suffocating elements of clothing. Reflex actions such as spraying the face with water, squeezing the earlobes, or inhaling ammonia can be effective. Medical support may include subcutaneous administration of 1-2 ml of cordiamine or caffeine-sodium benzoate. In case of a significant decrease in blood pressure, intravenous or subcutaneous administration of 1 ml of 1% mezaton solution is used [1, 4, 20].

In the context of dental care, careful collection of anamnesis, especially in elderly patients, makes it possible to identify existing cardiovascular pathology. Knowledge of the clinical manifestations of major cardiac diseases by doctors of dental specialties allows us to adequately assess the risks to the patient and determine the appropriate treatment tactics. The correct choice of the method and means of anesthesia, if necessary, the involvement of the advice of a cardiologist and an anesthesiologist, contribute to the prevention of cardiovascular complications during dental procedures. Awareness of emergency measures at the first aid level helps to prevent the adverse effects of such conditions.

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