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PREVENTION OF THROMBOEMBOLIC COMPLICATIONS IN A PATIENT WITH MORBID OBESITY AFTER BARIATRIC SURGERY

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The report presents a clinical case of a patient with morbid obesity who underwent bariatric surgery for weight reduction. The assessment of the patient's condition revealed an increased risk of venous thromboembolism (VTE) due to comorbidities such as arterial hypertension and type II diabetes. Both pharmacological and non-pharmacological measures were implemented for the prevention of thromboembolic complications, including sodium enoxaparin and pentoxifylline, as well as active rehabilitation treatment.

During the postoperative observation of the patient, low-frequency piezoelectric thromboelastography revealed that the combined treatment significantly reduced the risk of VTE. The results confirmed the necessity of an individualized approach to the prevention of thromboembolic complications in patients with morbid obesity.

The report emphasizes the importance of a comprehensive approach to thromboembolism prevention, as well as the role of thromboelastography in hemostasis monitoring in clinical practice. The conclusions indicate the need for the development of specialized prevention protocols for patients at high risk.

Key words: morbid obesity, bariatric surgery, venous thromboembolism (VTE), thromboembolism prevention, sodium enoxaparin, pentoxifylline, thromboelastography, hemostasis, clinical case, anticoagulant therapy.

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ПРОФІЛАКТИКА ТРОМБОЕМБОЛІЧНИХ УСКЛАДНЕНЬ У ПАЦІЄНТА З МОРБІДНИМ ОЖИРІННЯМ ПІСЛЯ БАРІАТРИЧНОЇ ХІРУРГІЇ

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У доповіді представлено клінічний випадок пацієнта з морбідним ожирінням, який проходив баріатричну хірургію з метою зниження ваги. Оцінка стану пацієнта показала підвищений ризик венозної тромбоемболії (ВТЕ) через супутні захворювання, такі як артеріальна гіпертензія та цукровий діабет II типу. Для профілактики тромбоемболічних ускладнень були застосовані як фармакологічні, так і нефармакологічні заходи, включаючи еноксапарин натрію та пентоксифіллін, а також активне реабілітаційне лікування.

Під час спостереження за пацієнтом після операції за допомогою низькочастотної п'єзоелектричної тромбоеластографії виявлено, що комбіноване лікування значно знизило ризик розвитку ВТЕ. Результати підтвердили необхідність індивідуального підходу до профілактики тромбоемболічних ускладнень у пацієнтів з морбідним ожирінням.

Доповідь підкреслює важливість комплексного підходу до профілактики тромбоемболії, а також роль тромбоеластографії у контролі гемостазу в клінічній практиці. Висновки свідчать про необхідність розробки спеціалізованих протоколів профілактики у пацієнтів із високим ризиком.

Ключові слова: морбідне ожиріння, баріатрична хірургія, венозна тромбоемболія (ВТЕ), профілактика тромбоемболії, еноксапарин натрію, пентоксифіллін, тромбоеластографія, гемостаз, клінічний випадок, антикоагулянтна терапія.

Introduction. Obesity has become a global epidemic of the 21st century, and according to the World Health Organization, over 1.7 billion people worldwide suffer from overweight or obesity [1]. This issue causes serious complications, including venous thromboembolism (VTE), which is a common cause of morbidity and mortality after bariatric surgery. [2; 4; 5; 6; 10]. This report presents a case of a patient with morbid obesity who underwent bariatric surgery, as well as the results of thromboembolic complication prevention. [3; 6; 8; 9; 11; 12].

The patient, a 45-year-old male, stood 175 cm tall and weighed 135 kg, resulting in a Body Mass Index (BMI) of 44.1 kg/m^2, indicating morbid obesity. He suffered from arterial hypertension and type II diabetes. Over the past five years, the patient attempted to lose weight through various diets and physical activities but without success. At the time of consultation, the patient complained of persistent fatigue, shortness of breath during physical activity, and limited mobility.

The patient denies the presence of viral hepatitis, venereal diseases, and tuberculosis. The medical history indicates chronic conditions: morbid obesity and Pickwick syndrome. The allergic history is not significant, according to the patient.

Currently, the patient is conscious, alert, and available for productive contact, complaining about symptoms related to the primary condition. The medical history notes that the patient underwent an appendectomy 20 years ago under general anesthesia, with no complications.

The patient has a hypersthenic constitution due to morbid obesity. The skin and visible mucous membranes are of physiological color. There is no fever.

Breathing is spontaneous, adequate in frequency and volume but somewhat diminished in the lower basal areas of the lungs. No wheezing is detected on auscultation. The respiratory rate is 16 breaths per minute, and SpO2 is 97%.

Heart activity is rhythmic, with muffled tones; the pulse is of satisfactory quality. The heart rate (HR) is 100 beats per minute, and hemodynamics are stable, with a blood pressure of 148/78 mmHg. The abdomen is soft, enlarged in volume due to subcutaneous fat tissue.

Prior to bariatric surgery, the patient underwent a comprehensive examination, which included laboratory and instrumental studies. Laboratory tests revealed elevated levels of glucose, cholesterol, and triglycerides, while the coagulogram indicated increased fibrinogen levels. Instrumental studies, including abdominal ultrasound,

showed fatty liver without pancreatic pathologies. The electrocardiogram (ECG) shows sinus tachycardia with a heart rate of 100 beats per minute, right axis deviation, and hypoxic changes in the myocardium. The echocardiogram shows that the heart chambers have normal sizes, with mild concentric hypertrophy of the left ventricle (LV). The interventricular septum is normal.

Overall and local mobility is not impaired. There is 1 type of left ventricular (LV) diastolic dysfunction (DD) with normal pressure in the left atrium. The valvular apparatus is well-formed and functions properly; the pericardium and major vessels show no changes. The common carotid artery on both sides is not thickened – 0.6 mm. The systolic function of the LV and the heart's pumping function are preserved. Hypertensive heart, 1 type of LV diastolic dysfunction with normal pressure in the left atrium.

Laboratory Tests:

– Complete Blood Count: No anemia was found; leukocytes and platelets were within normal ranges.

– Biochemical Blood Test: Elevated glucose (8.5 mmol/L), cholesterol (6.5 mmol/L), and triglycerides (2.5 mmol/L).

– Coagulogram: Elevated fibrinogen level (4.2 g/L).

Considering the medical history, laboratory and instrumental research data, as well as the type and planned duration of the surgical intervention, the chosen type of anesthesia is: TIVA + inhalation anesthetics + muscle relaxants/ventilation.

The risk according to the ASA scale is II. Mallampati class is 4.

Based on the obtained data, the decision was made to perform Roux-en-Y gastric bypass. Due to the high risk of venous thromboembolism, the patient was prescribed prevention with sodium enoxaparin (0.1%): 0.2 ml subcutaneously 12 hours before the procedure; compression stockings and intermittent pneumatic compression of the lower extremities during the intraoperative period, and after the operation, the patient was prescribed preventive measures that included pharmacological and non-pharmacological interventions.

Prevention of thromboembolic complications in the postoperative period:

pharmacological prevention:

– Sodium enoxaparin (0.1%): 0.2 ml subcutaneously twice daily every 12 hours.

– Pentoxifylline (100 mg): twice daily every 12 hours.

Non-Pharmacological Measures:

– Early activation of the patient after surgery.

– Comprehensive therapy of respiratory exercises to improve lung perfusion.

– Use of compression stockings.

Results. Postoperative Period:

1. Day 1:

– The patient's general condition was satisfactory.

– Early activation began: the patient moved around the room.

2. Day 3:

– Coagulation parameters were monitored using low-frequency piezoelectric thromboelastography (LFPT).

– ICC (Intensity of Contact Coagulation) was 22% above normal. ICD (Intensity of Coagulation Drive) was 30% above normal.

3. Day 5:

The patient underwent LFPT. Results:

– ICC decreased by 15%; ICD normalized; MPS (Maximum Clot Density) increased by 2%.

– IRLS (Index of Retraction and Lysis of the Clot) was 18% above normal.

The operation was successful, and the patient remained in the hospital under the supervision of medical staff. On the first day after the surgery, the patient's condition was satisfactory. By the third day, the patient's activity increased, and coagulation parameters were monitored using LFPT. Results indicated that the risk of venous thromboembolism remained high; however, due to the combined therapy, the risk significantly decreased. On the fifth day post-surgery, the patient underwent LFPT diagnostics, which indicated improved hemostasis parameters.

Conclusion. In patients with morbid obesity undergoing bariatric surgery, the risk of venous thromboembolism is elevated. LFPT has proven to be an effective method for assessing hemostasis status. Combined therapy with enoxaparin and pentoxifylline showed better results in preventing thromboembolic complications. This clinical case confirms the importance of a comprehensive approach to the prevention of thromboembolic complications in patients with morbid obesity undergoing bariatric surgery. Developing individual protocols for thromboembolism prevention for patients at increased risk, including doses of anticoagulants and timing of their administration, is an essential step in improving clinical outcomes.

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