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DIAGNOSIS, PREVENTION AND TREATMENT OF THROMBOEMBOLIC COMPLICATIONS IN THE EARLY POSTOPERATIVE PERIOD.

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Annotation: This article outlines the prevention and diagnosis, as well as treatment of thromboembolic complications.

Key words: popliteal-femoral segment, pulmonary embolism, intravascular invasive manipulation, occlusive thrombus, unfractionated heparin.

ДИАГНОСТИКА, ПРОФИЛАКТИКА И ЛЕЧЕНИЕ ТРОМБОЭМБОЛИЧЕСКИХ ОСЛОЖНЕНИЙ В РАННЕМ ПОСЛЕОПЕРАЦИОННОМ ПЕРИОДЕ.

Аннотация: В статье изложены вопросы профилактики и диагностики, а также лечения тромбоэмболических осложнений.

Ключевые слова: подколенно-бедренный сегмент, тромбоэмболия легочной артерии, внутрисосудистые инвазивные манипуляции, обтурирующий тромб, нефракционированный гепарин.

It should be understood that the source of the thrombus that reaches the pulmonary circulation is mainly located in the vessels of the inferior vena cava basin, namely in the veins of the lower extremities and pelvis. Most often, the primary thrombus is located in the ileocaval segments or proximal veins of the lower extremities (popliteus-femoral segment). Venous thrombosis localized in the distal deep veins of the lower extremities (legs) is complicated by pulmonary embolism in 1–5% of cases.

Recently, there have been reports of an increase in cases of pulmonary embolism from the superior vena cava basin (up to 3.5%) as a result of the placement of venous catheters in intensive care units and intensive care units.

The most dangerous for the development of pulmonary embolism are “floating thrombi”, which have a fixation point in the distal venous bed; the rest of them are located freely and are not connected with the walls of the vein throughout their entire length, and their length can vary from 5 to 20 cm.

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A “floating thrombus” usually forms in veins of a smaller caliber, and the process of thrombus formation spreads proximally to larger ones: from the deep veins of the leg - to the popliteal vein, then to the deep and common femoral artery, from the internal - to the common iliac, from the common iliac - to the lower vena cava

The size of thromboemboli determines their localization in the vessels of the pulmonary artery; they are usually fixed at the sites of division of the pulmonary vessels.

According to various authors, embolization of the trunk and main branches of the pulmonary artery occurs in 50%, lobar and segmental - in 22%, small branches - in 30% of cases. Simultaneous damage to the arteries of both lungs reaches 65% of all cases of pulmonary embolism, in 20% only the right lung is affected, in 10% only the left lung is affected, the lower lobes are affected 4 times more often than the upper ones. Risk factors for venous thromboembolism (pulmonary embolism in particular) are the following: old age, prolonged immobility (due to paresis of the limbs, after injuries, in the postoperative period, with frequent and long flights on airplanes or trips in cars, etc.), cancer. , injuries (especially fractures of large bones), surgical interventions and intravascular invasive manipulations (subclavian catheter, etc.), taking certain medications (hormone replacement therapy, use of oral contraceptives, chemotherapy), chronic cardiac or respiratory failure, pregnancy and the postpartum period, thrombophilia. There is evidence that pulmonary embolism is also associated with problems such as obesity, metabolic syndrome, hypertension, smoking, and cardiovascular events (myocardial infarction, stroke). Thus, thromboembolic complications, according to various authors, occur in 30–60% of patients with strokes that caused paralysis of the lower extremities, in 5–35% of patients after myocardial infarction, in more than 12% of people with congestive heart failure.

A serious risk factor is a history of venous disease of the lower extremities, especially deep vein thrombosis. The incidence of pulmonary embolism increases with age: the average age of patients is 62 years, with the majority (at least 65%) of patients over 60 years of age, and in patients over 80 years of age, pulmonary embolism occurs 8 times more often than in persons under 50 years of age .

Thrombi from the veins of the lower extremities and pelvis with the blood flow enter the right atrium, then into the right ventricle, where they fragment. From the right ventricle, blood clots enter the pulmonary circulation.

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Massive pulmonary embolism is accompanied by an increase in pressure in the pulmonary artery, and this leads to an increase in overall vascular resistance in the lungs. Overload of the right ventricle occurs, a drop in cardiac output and the development of acute cardiovascular failure.

Pharmacological agents used to prevent deep vein thrombosis are represented by: low molecular weight dextrans: Reopoliglyukin - dextran with cf. they say weighing 30,000–40,000 + dextrose (Rheomacrodex) and desaggregants, mainly acetylsalicylic acid (Aspirin); • ordinary unfractionated heparin;• low molecular weight heparins: enoxaparin, nadroparin, etc.; • indirect anticoagulants (warfarin, etc.). The method of anesthesia is of a certain importance. Bearing in mind postoperative thromboembolic complications, the use of regional (spinal or epidural) intraoperative anesthesia is preferable. Prophylactic anticoagulants after surgery should be prescribed for at least 7–10 days; their administration is necessary until the patient is completely mobilized.

Extension of prophylaxis should be discussed in cases where hospitalization is prolonged or the risk of thromboembolic complications persists after the patient is discharged from the hospital. Prophylactic administration of low molecular weight heparin is canceled without prescribing indirect anticoagulants.

Type I. Thrombosis of the distal parts of the great or small saphenous veins or their tributaries. The thrombotic process is localized distal to the knee joint when the great saphenous vein is affected and below the saphenopopliteal anastomosis when the small saphenous vein is affected. There is no threat of pulmonary embolism. Subsequently, thrombophlebitis either subsides or becomes one of the following types.

Type II. Thrombosis extends to the saphenofemoral or saphenopopliteal anastomosis, without moving to the femoral/popliteal vein. There is no immediate threat of pulmonary arterial embolism, but it becomes real in the near future with the proximal spread of thrombosis.

Type III. Thrombosis, through the mouth of the saphenous vein, passes to the deep venous system. The apex of such a thrombus, as a rule, is non-occlusive and floats (floats) in the bloodstream of the femoral or popliteal vein. The thrombus is fixed to the venous wall only in the proximal section of the saphenous vein. The threat of pulmonary embolism, including fatal ones, is very high. Subsequently, such a floating thrombus either turns into an embolus or becomes a parietal or occlusive thrombus of the main deep vein. Further spread of thrombosis along the deep venous system in the proximal

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and distal directions leads to the development of extensive occlusion of the femorioiliac segment.

Type IV. Thrombosis does not spread to the estuarine sections, but through incompetent perforating veins of the leg or thigh it passes to the deep venous system. The presence or absence of a threat of pulmonary embolism in patients in this group depends primarily on the nature of the thrombus (floating, parietal or occlusive) in the deep venous line.

Type V. Any of the listed variants of thrombophlebitis is combined with isolated simultaneous thrombosis of the deep venous system of both the affected and contralateral limbs.

Conservative treatment should include the following main components:

1) active mode;

2) elastic compression of the lower extremities;

3) systemic pharmacotherapy:

- in case of spontaneous thrombosis of the superficial veins of the lower extremities, subcutaneous administration of prophylactic doses of low molecular weight heparins, as well as doses of unfractionated heparin, which are slightly higher than usual prophylactic ones, is possible, for at least 4 weeks.

An alternative to 4 weeks of subcutaneous heparin administration may be the use of vitamin K antagonists - indirect anticoagulants; warfarin with target International normalized ratio 2.5 (2.0–3.0). Anticoagulants in therapeutic doses are absolutely indicated for all patients in whom a thrombus has transferred to the deep venous system or has developed simultaneous deep vein thrombosis;

- in case of severe pain, it is possible to use non-steroidal anti-inflammatory drugs orally for 7-10 days;

4) local therapeutic effect on the affected limb (cold, drugs containing heparin.

It is inappropriate to use antibacterial drugs in the complex treatment of saphenous vein thrombophlebitis in the absence of signs of a systemic inflammatory reaction.

Surgical treatment

1. Radical phlebectomy. It provides not only for eliminating the threat of deep venous thrombosis and pulmonary embolism, but also for removing all varicose veins (thrombosed and non-thrombosed) with mandatory ligation of incompetent perforators.

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It can be performed in uncomplicated patients in the first 2 weeks of the disease. At a later date, a dense inflammatory infiltrate in the area of varicothrombophlebitis makes removal of the affected veins very traumatic.

2. Stem phlebectomy on the thigh. It is advisable to resort to such a limited phlebectomy in cases of long-term (more than 2 weeks) thrombophlebitis on the lower leg, which later took on an ascending nature and spread to the thigh. In such conditions, it is reasonable not to perform traumatic interventions below the level of the knee joint on the lower leg.

3. Crossectomy (Troyanov-Trendelenburg operation). High ligation of the great (or small) saphenous vein with mandatory ligation of all estuarine tributaries and excision of the trunk of the saphenous vein within the surgical wound. Minimum required intervention for acute varicothrombophlebitis. The operation is feasible in any category of patients. It is usually performed under local anesthesia.

4. Thrombectomy from the main veins.

Performed when thrombosis spreads beyond the safenofemoral anastomosis. The operation can be performed under regional anesthesia or using intubation endotracheal anesthesia. The choice of access and thrombectomy method is determined by the level of location of the proximal part of the thrombus.

5. Thrombectomy from the perforating vein. Performed in case of perforator thrombosis.

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