Critical Limb Ischemia

Critical limb ischemia is a condition of limb ischemia that **necessarily requires diagnosis by imaging methods** and, as a result, **appropriate therapy** . It is important to differentiate this syndrome from acute limb ischemia.

The prognosis of a patient with critical limb ischemia is comparable to the prognosis of a patient with malignancy.

Criteria

Advanced degree of ischemia:

- limb ischemia with **resting pain** (*Fontain stage III*) on analgesic therapy lasting more than 2 weeks or
- visible ulceration or gangrene (*stage IV of Fontain's classification)*

and at the same time low blood pressure in the limbs:

- **ankle pressure <50 mmHg or**
- **finger pressure <30 mmHg**

Clinical Picture

The predominant symptom is **resting pain** that can be relieved by hanging the limbs off of the bed or even moving and walking around. It occurs mainly at night.

Ulceration or **gangrene** appears in stage IV of Fontaine's classification . In some patients, the defects develop progressively starting with resting pain. Other patients (especially diabetics with neuroischemic defects) come to the doctor directly with ulceration or gangrene.

Imaging Examination

In particular, digital substration angiography (DSA) is performed. OT

Therapy

Pain Relief - analgesics, laying the limb on a soft surface, warm shoes.

Local treatment of defects- use of specially shaped shoes, removal of necrotic masses, or treatment of infection

Revascularisation

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IronDistribution:
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- bypass (end-to-side replacement)
- substitution (end-to-end replacement)
- disobliteraiton with embolectomy (Fogarty catheter, rotarex...)
- plastica-patch
- disobliteration with endarterectomy

Replacements:

Types

- artificial - must be sewn with a non-absorbable stitch
  - knitted - adapts better, flexible, used to have the disadvantage of large blood losses (mainly through large eyes, which can be solved today via injection with collagen or albumin)
  - woven - not as elastic as knitted (smaller meshes), previously had the advantage of lower blood loss
  - cast (PTFE) - foam structure (goratex etc.)
- biological - vena saphena magna

Biological replacements generally last longer. For a particular type of replacement, the length of function depends on the patient's risk of thrombosis . This depends on the speed of blood flow (stagnation strongly increases the risk of thrombosis), ie blood flow through arterial replacement. Blood flow depends mainly on peripheral resistance, ie on the **peripheral capacity of blood vessels** (run-off bed capacity). This is affected by the degree of peripheral occlusion (peripheral embolism, how many iliac arteries are permeable, etc.) and the quality of the collateral bed.

Bypass

- aortofemoral
- infrainguinal - when closed more in the periphery
- extraanatomical - if it is necessary to supply the femoral artery, it is not necessary to open the abdominal cavity (inflow is not from the aorta), it can be performed in patients with contraindications of extensive operations (epidural or even local anesthesia is sufficient), as an emergency procedure, in infection of previous reconstructions; less physiological than anatomical bypasses
  - femoro-femoral bypass (S-cross-over, U-cross-over)
  - axillo-femoral bypass (U-cross-over, Y-bypass)
  - obturator bypass - through the obturator foramen, the femoral superficialis must be clear

Limb Salvage

After revascularization, it is necessary to try to save the limb. Waiting before possible amputation should be at least 3 days to assess the effect of revascularization and necrotic tissue demarcation. Debridement of various extents can be performed.

Large amputation (above the ankle) is indicated for progressive infection with a septic outcome. It is performed to save lives.

References

Related Articles

- Chronic ischemic disease of the lower limbs
- Angioinvasive treatment of arterial occlusions and stenoses
- Arterial Reconstruction
- Ankle pressure index
- Fontaine's classification

References

- KLIKA, Tomáš. *Ischemická choroba dolních končetin* [přednáška k předmětu Chirurgie – předstátnicová stáž, obor Všeobecné lékařství, 1. lékařská fakulta Univerzita Karlova v Praze]. Praha. 2013-11-19.
- ČEŠKA, Richard, ŠTULC, Tomáš, Vladimír TESAŘ a Milan LUKÁŠ, et al. *Interna.* 3. vydání. Praha : Stanislav Juhaňák - Triton, 2020. 964 s. s. 189-200. ISBN 978-80-7553-780-5.