

Treatment of intracranial aneurysm

- rupture of aneurysm here causes subarachnoid hemorrhage
- the only rational way to prevent recurrent bleeding from an aneurysm is to close its neck with a clamp or to obliterate its sac endovascularly
- the greatest risk of a new rupture is within 48 h after the first bleeding
- 4.-10. the day after the bleeding, a strong vasospasm often occurs, which can cause ischemia and the operation could only become more difficult at this time → the operation must therefore be well timed
- for early surgery we therefore have a period of the first 72 hours after bleeding
- for the indication for surgery, the time since SAK, the patient's condition, CT finding is decisive
- **selection of patients** - if we find an expansive hematoma on CT, we always operate, the goal is not only to clamp the aneurysm, but also to evacuate the hematoma acutely
 - if no hematoma is present (on CT only blood in cerebral fluid - i.e. only SAH...) - grade I to III. we operate immediately (within 72 hours)
 - for patients in IV. and SAK degree V - it is recommended to wait for an improvement of at least one degree
 - the patient's serious condition is not caused by brain compression, but by ischemic changes, we would not be able to help him now by closing the aneurysm
- **timing of surgery** - important to prevent rerupture and prevent vasospasm
 - early operations (before the onset of vasospasm) generally have a higher operative mortality, but late operations (up to 21 days after SAH, i.e. after vasospasm has subsided) carry a high risk of repeated bleeding and overall have a worse outcome
 - operation between the 4th and 7th day after SAH is not at all suitable, due to vasospasm



Aneurysma a. cerebri media dx.

Preoperative Procedure

- even when diagnosing SAK, one must think about the risk of rebleeding → we will ensure absolute bed rest, head elevated to 30°, transport on a stretcher (even if the patient could escape...)
- after confirmation of SAK by CT, he should be transported to neurosurgery, we will perform panangiography
- **preoperative care** - absolute rest, administration of laxatives (difficulty defecation promotes reruptures), dexamethasone (prevention of edema), antihypertensives, nimodipine (Ca channel blocker, prevention of vasospasm), anticonvulsants (prevention, an epileptic seizure could lead to rerupture), the patient is in the ICU
 - after SAH, there is often a finding on the ECG that looks like subendocardial ischemia, it is caused by catecholamine washout caused by ischemia of the hypothalamus after SAH, this may manifest as a latent ICH

Treatment methods

Conservative therapy

- for postponed operations - includes the measures mentioned above
- if coagulum blocks the CSF channels, we introduce external ventricular drainage

Surgical therapy

- closure of the neck of the aneurysm while maintaining blood flow through other vessels
- performance is rerupture prevention, does not repair damage caused by previous SAK
- early operations are among the most complex neurosurgical operations

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Endovascular methods

- **coiling** - obliteration of the bulge bag with metal spirals
 - spirals have shape memory and coil themselves in the aneurysm, a coagulum forms on them and the entrance to the aneurysm is re-epithelialized
 - it is done angiographically, under an x-ray lamp, little burden for the patient
 - limitations of coiling - reachability of the aneurysm by catheterization, neck-to-sac ratio (when it is large, coils escape)
 - if the aneurysm has a wide neck, a stent is usually implanted first and coils are inserted through it to prevent leakage

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coiling aneurysmatu

Complications

- ischemia from vasospasm, cerebral edema, bleeding in the operative field, hemostasis disorders, hyporesorptive hydrocephalus

Postoperative Care

- the basis is the monitoring of the neurological condition, in case of deterioration of consciousness or accentuation of focal symptomatology - always CT
- prevention of postoperative vasospasm - "hyperdynamic therapy" - "3 H": hypervolemia, hypertension, hemodilution
 - only if the aneurysm is reliably closed and the patient has a healthy heart

Links

Related Articles

- Subarachnoid hemorrhage from aneurysm and A-V malformation

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