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Reasons for reoperation of patients undergoing surgical evacuation of an acute subdural hematoma – case raport and review of literature

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Abstract

Background:
We are presenting a case and as well as its analyzis regarding subdural hematoma reoperations.
Case description:
A 48-year-old patient after head trauma operated on due to diagnosed right-sided subdural hematoma. On the second day of hospitalization he developed epidural hematoma at the operation site, which reuired second surgery.
Conclusion:
Early detection and prompt treatment may improve the poor outcome in this group of patients.
The choice between craniotomy and craniectomy and additional risk factors as ASA and antiplatelet intake as well as age and alcohol abuse have unverified importance in the context of reoperation.

Key words: surgical evacuation; acute subdural hematoma.

Introduction

A 48-year-old white European man with no history of chronic comorbidities, was admitted to neurosurgical department for a serious head injury. The circumstances of the accident remain unclear.

An initial medical examination at the ER found the patient in severe condition, verbally unresponsive with Glasgow Coma Scale estimation set on 12 points (E3, V3, M6). On the right side of the scalp were visible, presumably recent skin abrasions as well as soft tissue swelling with a post-operative scar situated on the left side. Eye examination revealed anisocoria with the right pupil dilated with no response to removal of a light stimulus. In neurological examination of extremities left sided hemiparesis was discovered. Meningeal signs were negative and Babinski sign was positive on the left side. His blood pressure was 171/93 and heart rate 60 beats per minute. His blood oxygen was 99% (with oxygen mask being used).

The admission laboratory test showed hight ethanol – 4,07 thousandths, AST 326 U/L, ALT 83 U/L. The International Normalised Ratio was 1,200.

Differential diagnosis included acute subdural hematoma, epidural hematoma, subarachnoid haemorrhage, ischemic stroke and haemorrhagic stroke.

A brain scan without contrast performed several hours after his head injury showed an iso-dense extracerebral, acute SDH situated along the right convexity with an estimated maximum thickness of 18 mm and another one upon the left convexity with maximum thickness of 3mm. The SDH had a mass effect with a 7 mm deviation of midline structures to the left along with cerebral compression. There were also signs of a previous left-sided craniotomy. The initial damage assessment with the use of cervical CT, lung RTG and abdominal USG revealed no other lesions.

The patient was qualified to immediate surgery with subdural hematoma evacuation. He was quickly transferred from the emergency department to the neurosurgical operative room.

In order to evacuate hematoma, the linear incision resembling a reversed question mark was performed to carve a fronto-temporo-parietal flap which gave access to the entire right convexity. This confirmed the clotted appereance of the acute hematoma which then was removed.

Subsequently, the patient was admitted to the neurosurgical intensive care unit. His condition remained severe and his neurological state did not improve with iGCS estimated on 7 points (E1, V intubation =1, M5). The anisocory sustained with the right pupil dilated. Furthermore, the hemiparesis persisted. Due to lack of improvement of patient's health the control CT was performed and showed an epidural hematoma at the operation site, with estimated thickness of 29 mm. The cerebral edema of the right hemisphere caused a mass effect with 23 mm deviation of midline structures to the left side. (Fig.1)

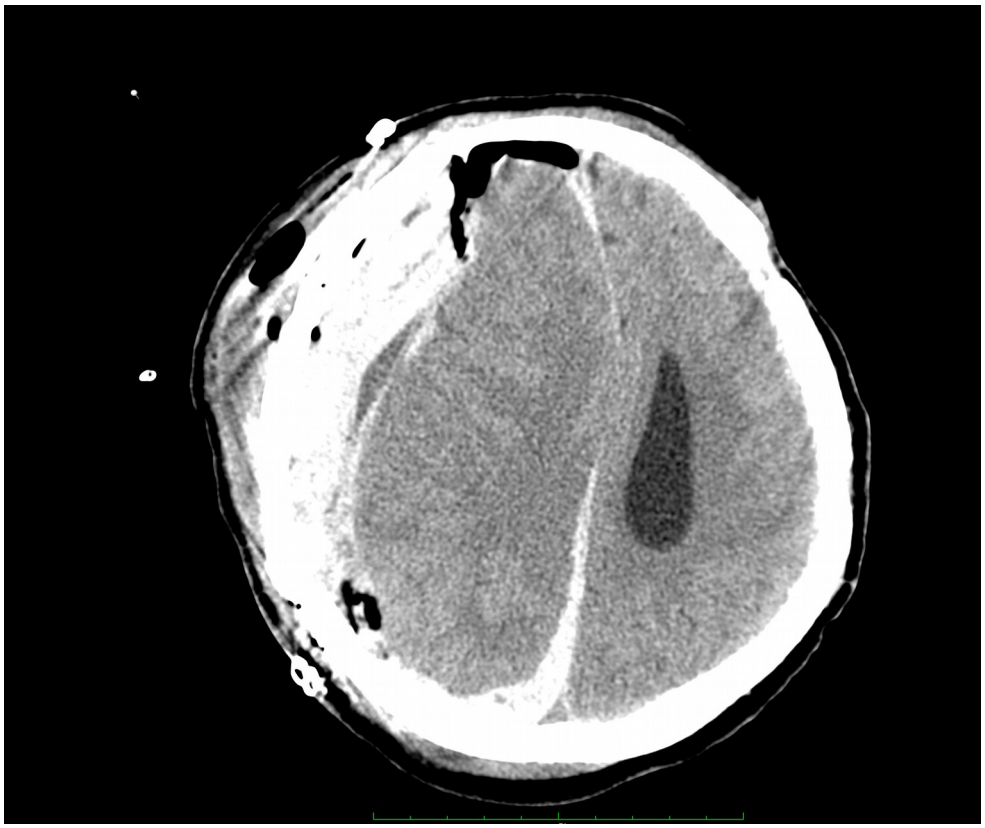

Fig. 1. Jatrogenic epidural hematoma after subdural hematoma removal.

The patient was then qualified for immediate re-operation with life indications. The right sided re-craniotomy was further performed with the removal of the right epidural hematoma.
In control CT of the head the postoperative effect was satisfactory – the hematoma was fully removed and the midline shift was reduced up to 16mm.
After the surgery the patient was transferred to the Intensive Care Unit. Within the next days of hospitalization his state gradually improved. At the third day he was conscious, verbally responsive with GCS estimated on 14 points (E3, V5, M6). Thereafter he was transferred to the district hospital.

Discussion

Acute subdural hematomas represent the main cause of death among patients suffering head trauma (1). The necessity for re-operation constitutes another factor that deteriorates prognosis. In a group of patients diagnosed with SDH, the qualification for re-operation might be required in

1 out of 3 patients (2). By all means, it entails a significant increase of health care expenditure.

The primary indications to an operative approach for patients suffering from SDH are: abrupt worsening neurologic state, translated to a drop in the GCS score by two points in comparison to the initial GCS evaluation or a new neurological deficit such as anisocoria or the increase of ICP by over 20mm Hg. In CT imaging, the thickness of the hematoma exceeding 10 mm or midline shift over 5mm depict the requirement for surgery (3).

Ross Bullock et. al. in their reaserch included 850 patients who underwent craniotomy for evacuation of a traumatic intracranial mass. In their papers only 59 patients (6,9%) developed a second hematoma at the operation site, which required a second operation. Even though 75 % of initial hematomas were intradural, 69% of postcraniectomy hematomas (PCH) were extradural. The main factor which predisposes to the intracranial bleeding is the large space underlying a craniotomy bone flap[8].

Analyzing available literature, among the main reasons for re-operation are: recurrent or residual subdural hematoma, contralateral SDH or intracerebral haemorrhage (2).

There is no statistically relevant correlation to the patients age, alcohol abuse, anti platelet therapy, anticoagulants intake and the increase frequency of re-operations (6).

The choice between craniotomy and craniectomy though, still remains controversial. Although both methods remain in common use, there is yet no clear-cut consent regarding the superiority of one over another. Research indicates a lack of advantage for mentioned operative techniques. Nonetheless Phan K et al. in meta-analysis involving 2006 craniotomies and 451 craniectomies performed due to SDH states indicates a correlation between decompresive craniectomy and a worse prognosis. Concomitantly, a substantial decrease of numbers of residual hematomas has been shown in patients who underwent decompressive craniectomy which is linked with a lesser need for re-operation.

Immediate transport to the emergency department remains the only proven factor that reduces morbidity in this group of patients.

References

1. Ryan, C. G., Thompson, R. E., Temkin, N. R., Crane, P. K., Ellenbogen, R. G., & Elmore, J. G. (2012). Acute traumatic subdural hematoma: current mortality and functional outcomes in adult patients at a Level I trauma center. The journal of trauma and acute care surgery, 73(5), 1348.
2. Chrastina, J., Šilar, Č., Zeman, T., Svoboda, M., Krajsa, J., Musilová, B., & Novák, Z. (2019). Reoperations after surgery for acute subdural hematoma: reasons, risk factors, and effects.

European Journal of Trauma and Emergency Surgery, 1-9.

3. Bullock, M. R., Chesnut, R., Ghajar, J., Gordon, D., Hartl, R., Newell, D. W., ... & Wilberger, J. E. (2006). Surgical management of acute subdural hematomas. Neurosurgery, 58(suppl_3), S2-16.

4. Shih-Han Chen; Yun Chen; Wen-Kuei Fang; Da-Wei Huang; Kuo-Chang Huang; Sheng-Hong Tseng. Comparison of Craniotomy and Decompressive Craniectomy in Severely Head-Injured Patients With Acute Subdural Hematoma The Journal of Trauma: Injury, Infection, and Critical Care. 71(6):1632-1636, DEC 2011.

5. Phan, K., Moore, J. M., Griessenauer, C., Dmytriw, A. A., Scherman, D. B., Sheik-Ali, S., ... & Rosenfeld, J. V. (2017). Craniotomy versus decompressive craniectomy for acute subdural hematoma: Systematic review and meta-analysis. World neurosurgery, 101, 677-685.

6. Kwinta BM, Krzyżewski RM, Kliś KM, Donicz P, Gackowska M, Polak J, Stachura K, Moskała M. Emergency reoperations in cranial neurosurgery. World Neurosurg. 2017;105:749–4.

7. Tien, H. C., Jung, V., Pinto, R., Mainprize, T., Scales, D. C., & Rizoli, S. B. (2011). Reducing time-to-treatment decreases mortality of trauma patients with acute subdural hematoma. Annals of surgery, 253(6), 1178-1183.

8. Bullock, R., Hannemann, C. O., Murray, L., & Teasdale, G. M. (1990). Recurrent hematomas following craniotomy for traumatic intracranial mass. Journal of neurosurgery, 72(1), 9-14.