SUBARACHNOID HAEMORRHAGE OF NON-VASCULAR ETIOLOGY AND CASE REPORT

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Abstract: *Subarachnoid haemorrhage of non-vascular etiology is a rare but particularly serious pathology representing an important problem in terms of treatment and prognosis of patients. The most important risk factors in the occurrence of subarachnoid haemorrhage are: age, neurological condition at admission, high blood pressure, cerebral arteriovenous malformations, smoking, drug use, coagulation disorders. The imaging diagnosis of subarachnoid hemorrhage is relatively easy to be a cerebral tomography computer examination and, of course, an angiographic examination cerebral cortex to detect aneurysmal dilatation.*

INTRODUCTION

Subarachnoid haemorrhage represents the accumulation of a quantity of blood and cerebrospinal fluid in the subarachnoid space and in the basal cisterns.

The most common cause is intracranial ruptured aneurysm representing 80% of the cases, and the rest being cerebral or spinal arteriovenous malformations. Vascular malformations are a heterogeneous group of rare vascular lesions of the brain, spinal cord or dura mater. Some remain asymptomatic (static lesions), others enlarge and become hemorrhagic (1), coagulation disorders, perimesencephalic idiopathic haemorrhage, arterial hypertension, cerebral artery dissection and cerebral vascular dissections, accounting for only 20% of all cases. Subarachnoid haemorrhage is a significant cause of morbidity and mortality.(2)

The main symptoms of subarachnoid haemorrhage (SAH) include: severe headache, light sensitivity (photophobia), diplopia, loss of consciousness or convulsions.(3) When there is a suspicion of subarachnoid haemorrhage it is imperious to perform a CT scan that can reveal an intraventricular sanguine efraction or to do angio MRI in order to provide a much more detailed possible cause of the SAH. Subarachnoid bleeding may occur at any age, but is mostly common in people aged between 45 and 70 years. Hemorrhage represents approximately 10 cases per 100.000 inhabitants per year, more common in men than in women.(4)

In the neurosurgical practice for the clinical evaluation of patients with subarachnoid haemorrhage, the Hunt and Hess scales are used, and the Fisher scale is used to assess the extent of subarachnoid hemorrhage and the risk of cerebral vasospasm.(5)

The Hunt and Hess scale has 5 degrees:

1. Asymptomatic, mild headache, slight nuchal stiffness
2. Moderate to severe headache, nuchal stiffness, lack of neurological deficits other than cranial nerve palsy
3. Drowsiness, confusion, mild focal neurologic deficit
4. Moderate and severe hemiparesis
5. Coma (6)

The most complications of subarachnoid neurologic haemorrhage are hydrocephalus, comorbid seizures and arterial vasospasm that is clinically manifested by insidious neurological deficits and it has a maximum of incidence between days 7 and 10. It appears by the effect of substances released from subarachnoid blood on arterial wall muscles, sympathetic hyperactivity, vascular endothelium injury, inflammatory reactions, and medication complications like cardiac disorders such as myocardial ischemic lesions on ECG, hyposemia, hyperglycemia, AHT, pulmonary complications, and venous thrombosis.(7)

CASE REPORT

We present the case of a N.I. male, 49 years old, known in a personal and pathological history with an infratentorial arachnid cyst from 2008 and hypertensive, is presented in the emergency service of Sibiu for intense headache, nausea, vomiting, generalized tonic-clonic crisis, suddenly debased during the day.

Cerebral CT angiography is performed, which detects bilateral SAH. The patient is admitted in the Sibiu Neurology Department for investigations and specialized treatment. Neurological examination of the patient presents a conscious, cooperative patient with no motor deficits, no coordination disorders, no sensory disturbances, with osteotendinous reflexes, symmetrical, intracranial hypertension syndrome, headache, vomiting. The patient is transferred to the neurosurgery department of Târgu-Mureş for further investigations where he performs CT angiography that shows no vascular pathological changes. The patient is then transferred to Sibiu Neurosurgery Department for further specialized treatment. During the hospitalization, the patient is being treated with:

- Nimotop-calcium blockers to prevent vasospasm and secondary ischemia,
- Algocalmin- analgesic
- Maintaining an optimal blood pressure for cerebral circulation,
- Perfusion therapy to obtain hemodilution,
- Brain depletion - Manitol,
- Corticotherapy - Dexamethasone

The evolution is favourable under the treatment with

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the neurological symptoms being relieved. A cerebral CT scan is performed showing the remission of subarachnoid haemorrhage. At discharge, the patient is in a good state, afebrile with the neurological symptomatology being relieved.

Figure no. 1. CT scan: subarachnoid haemorrhage and presence of supracerebellar infratentorial cyst

Figure no. 2. Magnetic Resonance Angiography excludes the presence of cerebral malformations

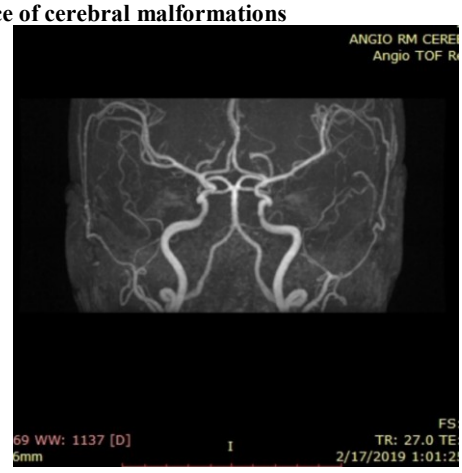
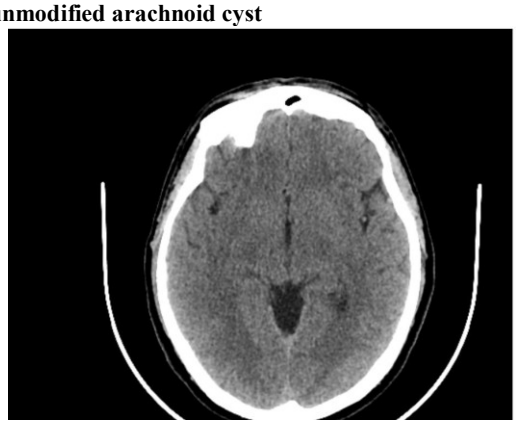


Figure no. 3. Control CT scan reveals the resorption of subarachnoid hemorrhage and keeping the dimensions of the unmodified arachnoid cyst



DISCUSSIONS

Although most cases of subarachnoid haemorrhage are due to broken cerebral malformations, there are cases where the paraclinical examination did not take the presence of cerebral malformations.

Trauma represents the highest incidence of subarachnoid hemorrhage. To a lesser extent, patients experience subarachnoid hemorrhage after using certain drugs like cocaine. After a complete evaluation in these cases, about 10 % do not have a clear identifying factors.(3)

The patient presented the clinical manifestations with typical subarachnoid hemorrhage symptoms, although paraclinic examinations excluded the vascular cerebral malformation.

The case presents a 49-year-old male that has no traumatic history, but with untreated hypertension, no anticoagulant therapy, no drug use, no haematological signs of vasculitis.

The patient without neurological sequelae offers a normal and rapid socio-professional integration due to the correct medical treatment he is administering in the Sibiu Neurosurgery Department.

After the SAH diagnosis is being confirmed based on the CT scans, the prognosis is predicted using the hunt and Hess scale. The scale is one of the grading systems that is used to classify the severity of a subarachnoid hemorrhage based on the patient's clinical condition. If the etiology of the SAH is unknown, the patient will go through more investigations to accurately deal the cause of hemorrhage.

The differential diagnosis of SAH is: cerebral amyloid angiopathy, reversible cerebral vasoconstriction syndrome, large-vessel stenotic atherosclerosis, and posterior reversible encephalopathy syndrome.(8)

There is a high incidence of spontaneous intracerebral bleeding within the venous infarct, and this concern has created the controversy of using anticoagulation for many years.

On other hand, withholding anticoagulation puts the patient at a bigger risk of developing ongoing occlusion of additional cortical veins and sinuses which can result in more extensions of venous infarcts.(9)

The CT scan performed reveals no signs of SAH.

The patient remains in neurosurgical supervision with regular clinical and paraclinical assessments

If subarachnoid hemorrhage destroys cerebral parenchyma, it may associate with intraparenchymal haemorrhage whose aetiology may be unknown, and in this case the prognosis depends on its volume which is calculated using the Broderick method or other methods like the method experienced by *Vicențiu Săceleanu* in his PhD thesis.(10)

CONCLUSIONS

The occurrence of subarachnoid haemorrhage in the context of untreated hypertension.

In the presented case the patient will be followed clinically and imagistically.

The patient will be followed clinically and imagistically. If the evolution and the size of the arachnoid cyst is changing and the patient is experiencing neurological worsening, it will be taken into consideration a possible therapeutic neurosurgical decision.

Cardiological monitoring and blood pressure monitoring.

Periodic cardiological monitoring and maintaining a normal blood pressure level in other to avoid future complications.

In this case it is mandatory to follow the recommended medication, to have a hyposodic and healthy diet, limited amount of alcohol, quit smoking and reduce stress.

Angio CT repeat and angiography over 6 months to exclude a brain malformation not revealed after the first examination.

The most important prognostic factors are the age of the patient, his or her neurologic status at admission, and the amount of subarachnoid haemorrhage on CT scan.

SAH is a potentially life threatening but treatable condition. Careful radiological as well as clinical analysis is important for the correct and early diagnosis of this condition.

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