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Article

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Ruptured anterior communicating artery aneurysm with spontaneous ventriculitis: An unusual case report with review of literature

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Abstract: Ventriculitis is a potentially life-threatening infection, and an early diagnosis is essential for the appropriate treatment of ventriculitis. Unsuspected ventriculitis might be a source of persistent infection and therapeutic failure in the management of meningitis. We present a rare case of spontaneous ventriculitis in a patient of acomm aneurysm who was neither immunocompromised nor any intervention was done on him.

Introduction

Intracranial aneurysm of infectious origin, are rare and represent 2% to 6% of all intracranial aneurysms. [2]They are more commonly seen in patients with septicemia and HIV/AIDS and are a particularly well-known complication of infective endocarditis. Intravenous drug abuse and relative immunocompromised state such as diabetes are becoming more commonly associated with cerebral mycotic aneurysm. [3]

Bacterial ventriculitis or meningitis is a relatively rare but serious complication after neurosurgical intervention. Clinically, the diagnosis is often difficult to establish because of its insidious onset and atypical symptoms. [1] Pyogenic ventriculitis is uncommonly reported in adults and is almost exclusively seen in patients who have undergone cranial surgery, placement of a drain or shunt, or sustained head trauma.

Here we present a case of ruptured anterior communicating artery aneurysm (? mycotic) with rare spontaneous ventriculitis in a young male who had not underwent any neurosurgical intervention and was not immunocompromised prior to diagnosis of ventriculitis.

No similar case report has been found in available search of literature.

Case report

A 40 years male presented to emergency department with complaints of severe holocranial headache since 2 days. It was associated with dizziness and vomiting

episodes. On examination, the patient was afebrile, with no neck rigidity and was neurologically intact.

His non-contrast CT Head was done in emergency, which shown right frontal and anterior interhemispheric intracerebral bleed along with intraventricular extension. Suspecting an aneurysmal bleed CT Angiography of brain was done. It showed saccular anterior communicating artery aneurysm of size 4.9 mm with narrow neck. A small unruptured right middle cerebral artery bifurcation aneurysm was also found.

Symptomatic treatment was started and digital substraction angiography was done on next day, which confirmed the finding of CT angiography of brain. Next day patient's condition detoriated with patient having high grade fever and severe neck rigidity with altered sensorium. CT head was done, which shown hydrocephalus with edema around the intra cerebral bleed. Patient was shifted to operation theatre for clipping of aneurysm. As as the brain was tense, before opening the duramater, external ventricular drain was inserted through left kochers point, instead of anterior third ventriculostomy for hydrocephalus. Purulent material with flakes came out from EVD, which was sent to microbiology, which reported pus cells with gram negative bacilli. Aneurysmal clipping was abandoned. Patient was shifted to intensive care unit with exraventricular drain in situ and started on higher antibiotics. CSF picture was suggestive of severe infection. Grossly, it was turbid, RBC-numerous, WBC-1000-1100cells/cumm, <90% polymorphs.CSF protein was305.07mg/dl, CSF sugar was low value mg/dl and chloride was 116.6 mmol/L. Culture of CSF shown klebsiella species.

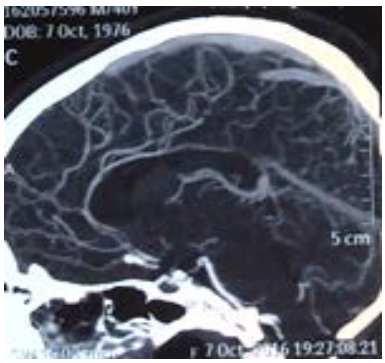

Figure 1 - T angiography of brain sagittal view showing anterior projecting acomm aneurysm of size 4.9 mm with narrow neck

Figure 2 - figure showing large hyperdense bleed in right parasaggital frontal lobe and anterior interhemispheric fissue

Patient"s 2-D echocardiography was done, to rule out infective-endocarditis, which showed no vegetations and was grossly normal. Patient"s chest x -ray and USG abdomen was also normal. Complete blood count and c-reactive protein was also within normal limit. Patient"s condition improved after 2 days of antibiotic therapy. But after 3 days patient's condition detoriated again and he expired.

Discussion

Mycotic aneurysm represents less than 5% of all intracranial aneurysm. [3]

Streptococcus viridians and Staphylococcus aureus are responsible for 57% to 91% of mycotic aneurysm. [2]More than 80% of patients with infectious aneurysm carry an underlying diagnosis of endocarditis. Extravascular infections like meningitis, cerebral abscess, subdural empyema, osteomyeltis of skull or sinus infections can also extend into the arterial wall and cause infectious aneurysm. Infectious aneurysms from an extravascular source tend to occur proximally,whereas embolic infectious aneurysms associated with infective endocarditis occur predominantly in distal cerebral arterial regions. [2] In this case, possibility of mycotic aneurysm is very less. The point against mycotic aneurysm are - (1) Proximal location of aneruysm (2) Size and shape of aneurym (3) No predisposing factor (endocarditis or any intervention) (4) immunological status.

Pyogenic ventriculitis refers to inflammation of the ventricular ependymal lining accompanied by pus in the ventricular system [5]. There can be various predisposing factors including a recent neurosurgical procedure, head injury with CSF leakage, meningitis, and brain abscess. [5] Pyogenic ventriculitis can complicate central nervous system (CNS) infections such as meningitis or brain abscesses and may even occur as a spontaneous infection in significantly immunocompromised patients.

The most common organisms associated are coagulase-negative Staphylococcus and S. aureus. Now a days, gram negative species such as Klebsiella pneumoniae, Pseudomonas aeruginosa, Enterobacter cloacae, and Enterobacter aerogenes are becoming increasingly common due to nosocomial infections [6]. Ventriculitis is associated with a high mortality, from 30 to 70%. [4] Because of the associated high rate of morbidity and mortality, early diagnosis of ventriculitis is crucial.

Ventriculitis may present insidiously with slow progress or there may be acute hydrocephalus with loss of consiousness. Diagnosis of pyogenic ventriculitis is difficult and relies on a high degree of clinical suspicion. Early diagnosis is essential to enable appropriate treatment.

In this case there can be two possibilities. First, there may be ruptured mycotic aneurysm with intraventricular extension of infection. But as mentioned earlier, this possibility is very less. Other possibility, May there be noninfectious ruptured anterior communicating artery aneurysm with spontaneous ventriculitis as no cause of ventriculitis can be detected. It may be due to some nosocomial infection or subclinical septicemia.

This case highlights the importance of greater degree of clinical suspicion needed in dealing with hydrocephalus with intraventricular bleed in case of an aneurysm and to rule out ventriculitis even if clinical picture is obscure.

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