

GIANT CEREBRAL MYCOTIC ANEURYSM: A CASE REPORT

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SUMMARY

A successful excision of a giant cerebral mycotic aneurysm in a young girl with endocarditis is presented. The clinical pictures can be confused with a cerebral abscess. C.T. Scan and angiography are essential in the diagnosis. Rupture of the aneurysm is associated with high mortality and morbidity which can be averted by prompt neurosurgical treatment.

CASE REPORT

L.L.S., a 19-year old Chinese girl was incidentally found to have asymptomatic heart murmurs two years ago. She enjoyed active health until January 1986 when she was admitted to Penang General Hospital with intermittent fever for two months. Echocardiogram revealed aortic and mitral incompetence and presence of vegetation at the aortic valve. Blood cultures were negative. She was treated as subacute endocarditis with intravenous gentamycin and crystalline penicillin. Whilst in the ward, she suddenly developed focal seizures involving the right side of her face and right hand, associated with severe headache and vomiting. A CAT Scan of the brain was done in Jan, 1986 and this was reported as showing a left parietal lobe abscess (fig. 1). She was then referred to University Hospital Kuala Lumpur for further management. Whilst in University Hospital, intravenous gentamycin and crystalline penicillin were continued with the addition of ceftazidime (fortum). She developed skin reactions and the

antibiotics were switched to vancomycin and metronidazole. However, after about three weeks of treatment, she once again developed reactions which include neck pain, erythematous, pruritic rashes and leucopenia. The antibiotics were again abandoned. A repeat CAT Scan of the brain in Feb, 1986 showed two separate well encapsulated abscesses in the left parietal lobe. Repeat blood cultures had been negative. Echocardiogram at University Hospital confirmed aortic incompetence with aortic valve vegetation and probably mitral incompetence.

She was eventually referred to the Division of Neurosurgery (UKM) General Hospital, Kuala Lumpur in March 1986. She was then well, afebrile, fully alert and rational. There was no speech disorder, visual field defect or other neurological deficit. There was no sign of increased intracranial pressure or meningism. She was in cardiac functional Class 1 and an echocardiogram confirmed previous findings. A CAT Scan of the brain was repeated and this showed a rounded lesion at the previous site of the 'cerebral abscess' which however, enhanced homogeneously with contrast (fig. 2). This raised the possibility of a mycotic aneurysm. A left carotid angiogram subsequently confirmed a large distal left middle cerebral artery aneurysm (fig. 3). In March 1986 a left parietal craniotomy was performed which revealed a 3 x 3 cm well encapsulated subcortical saccular pulsative mass arising from one of the distal parietal branches of the left middle cerebral artery. The mass was excised in toto without much difficulty with the sacrifice of the distal arterial branch (fig. 4). Histopathological examination revealed a thrombosed hematoma enclosed by a fibrous wall which contained no elastic material compatible with an aneurysm. Patient recovered uneventfully except for one episode of right

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focal facial twitching which was controlled with carbamazepine (Tegretol).

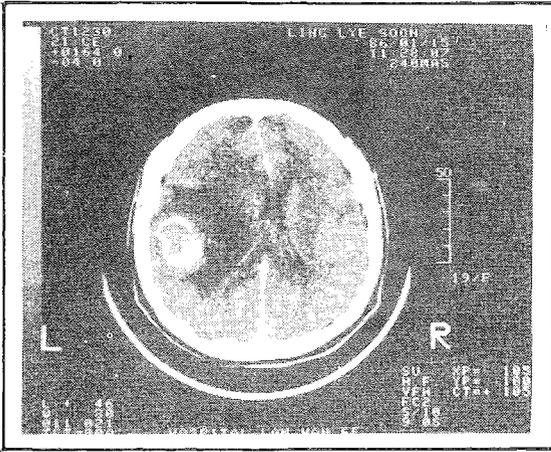


Fig. 1

C.T. Scan showing a well defined cystic lesion with irregular ring enhancement reported as abscess in the left parietal lobe of the brain.

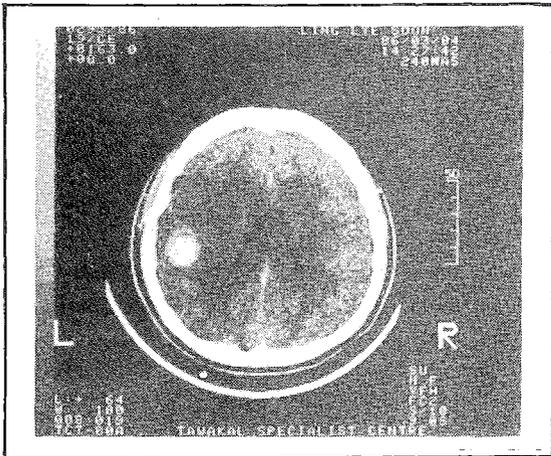


Fig. 2

Giant cerebral mycotic aneurysm.

DISCUSSION

The term 'Mycotic Aneurysm' was coined by Osler in 1885 to describe aortic aneurysm resulting from 'mycotic endarteritis' in cases of endocarditis. The word 'mycotic' actually refers to fungal infection but its usage in the context of aneurysm (including intracranial aneurysm) has been extended to include bacterial infections as well. The incidence of cerebral mycotic aneurysms

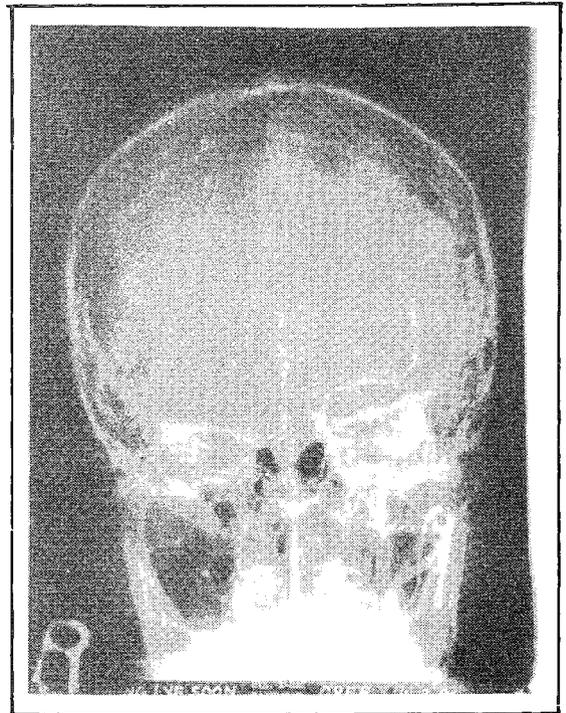


Fig. 3

AP view of the left carotid angiogram demonstrating an aneurysm arising from one of the peripheral parietal branches of the left middle cerebral artery.

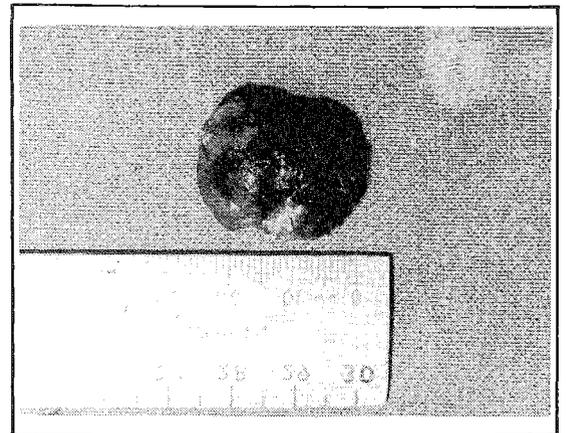


Fig. 4

Mycotic aneurysm with cavity partially obliterated by blood clot excised in toto.

amongst endocarditis patients varies between 2–10% according to different studies. Of all cerebral aneurysms, 25–30% were said to be of mycotic aneurysms. This vast discrepancy in the

percentage of mycotic aneurysms reflects the dramatic drop in its incidence over the years as a result of advances in the antibiotic therapy of endocarditis and diagnostic procedures. More recent series indicate that cerebral mycotic aneurysms make up about 1–2% of all cerebral aneurysms. It is generally accepted that cerebral mycotic aneurysms result from blood borne infective emboli causing focal arteritis and weakening of the arterial wall leading to fusiform or saccular dilatation of the vessel. These aneurysms are usually less than 1cm in diameter (intracranial aneurysms of more than 2.5 cm in diameter are customarily described as giant aneurysms). These aneurysms commonly occur at a distal peripheral branch of the cerebral artery. About two-thirds of the cerebral mycotic aneurysms are located on the middle cerebral arteries, about twice more often on the right side as on the left. Multiple aneurysms have been reported in about 14–50% of cases. The wall of the aneurysm is thin and friable which can easily rupture and give rise to intracerebral hematoma or subarachnoid hemorrhage. The aneurysm may become smaller or even disappear with appropriate antibiotic therapy. On the contrary, the aneurysm can increase in size or the focal infection may spread to the brain parenchyma resulting in cerebral oedema or abscess formation. Cerebral mycotic aneurysms are commonly associated with endocarditis (about 70% in some series). Other sources of infection include meningitis, septicaemia, cavernous sinus thrombosis. The common bacterial agents are streptococcus viridans and staphylococcus aureus. Apart from the signs and symptoms of the primary diseases, patients with cerebral mycotic aneurysms commonly present with subarachnoid hemorrhage (80%), cerebral hypoxia/ischaemia, signs of increased intracranial pressure or epilepsy. Some patients may not have any cerebral symptoms or signs at all. Cerebral mycotic aneurysms appear to affect both sexes equally, the younger age groups (average 29 years) being more frequently affected.

The first operative procedure on a cerebral aneurysm was carried out by Campbell & Burk-lund in 1947 on a young woman with a rupture on the right middle cerebral artery aneurysm and endocarditis. The patient did fairly well after

cervical internal carotid artery ligation and intracranial trapping procedure. In 1958, Aubertin et. al. reported clipping of a mycotic aneurysm. In 1960, Reigh and Lemmen presented the first successful excision of a mycotic anterior cerebral artery aneurysm. Though the result of therapy of cerebral mycotic aneurysm has improved, the mortality rate is still high ranging from 46% to 80%.

The case reported once again provides an excellent example of intracranial complication arising from heart disease — in her case most probably chronic rheumatic heart disease. The two-month history of intermittent fever signified active endocarditis with probably septic embolization which was inadequately treated. The sudden onset of headache and focal seizure is clear indication of cerebral embolization with focal cerebral ischaemia or infarction, or for that matter even cerebral hemorrhage. The availability of a computerized axial tomogram scanner has once again proved to be extremely useful in such circumstances. The first scan demonstrated a cystic lesion with ring enhancement and surrounding oedema which is the typical appearance of a cerebral abscess, except for the presence of intracavitary dense material. It was important to ascertain at this stage whether the cystic lesion represented the mycotic aneurysm containing mural thrombus. If mistaken as an abscess, needle aspiration of an aneurysm will prove to be disastrous. Even at this stage, angiographic study is mandatory to exclude an aneurysm. The suspicion of a mycotic aneurysm is further strengthened by the third scan which demonstrated a homogeneously enhanced lesion. Angiography irrevocably confirmed the diagnosis. It was fortunate indeed that the mycotic aneurysm was situated peripherally with a rather thick wall which enabled it to be excised completely without any untoward incidence. Delay in surgical treatment could have resulted in rupture of the aneurysm with the inevitable high mortality and morbidity.

REFERENCES

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