

Ruptured Cerebral Mycotic Aneurysm with Subarachnoid Hemorrhage Complicating Infectious Endocarditis

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Abstract

Case Report

Mycotic aneurysm is a redoubtable complication of infectious endocarditis which is the source of many other complications and is generally difficult to diagnose. They are secondary to the migration vegetations in the cerebral circulation, which, depending on its septic nature or not, can give different clinical pictures: ischemic embolic vascular accidents, meningitis, cerebral hemorrhages and brain abscesses. We report in this article a case of a 36-year-old patient, hospitalized in the cardiology department for infective endocarditis, who suddenly presented with intense headaches without any other associated signs. A cerebral scan (Fig-1) was carried out in emergency, which was in favor of a subarachnoid hemorrhage with demonstration of a saccular aneurysm of the terminal portion of the basilar trunk. Two days later, for a better characterization, the patient underwent a cerebral arteriography (Fig-2) which revealed an aneurysmal dilation of the terminal portion of the basilar trunk of mycotic origin.

Keywords: Mycotic aneurysm, imaging, endocarditis.

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INTRODUCTION

Cerebral mycotic aneurysms are a rare and serious complication of infectious endocarditis which engage the vital and functional prognosis. They represent less than 10% of the neurological complications of infectious endocarditis. These aneurysms result from septic embolism of vegetation in the cerebral circulation. The septic embolus, localized in the vascular lumen or at the level of the vasa vasorum, creates a suppurative inflammatory lesion of the vascular wall at the level of the intima, which diffuses by contiguity, in and out.

CASE REPORT

We report a case of a 36-year-old patient, hospitalized in the cardiology department for infective endocarditis, who suddenly presented with intense headaches without any other associated signs.

The clinical examination found a conscious patient, hemodynamically and respiratory stable with a normal neurological examination, cardiovascular examination: mitral heart murmur.

A cerebral scan (Fig-1) was carried out in emergency, which was in favor of a subarachnoid hemorrhage with demonstration of a saccular aneurysm of the terminal portion of the basilar trunk. Two days later, for a better characterization, the patient underwent a cerebral arteriography (Fig-2) which revealed an aneurysmal dilation of the terminal portion of the basilar trunk of mycotic origin.

The patient received treatment with gentamicin with third generation cephalosporin and antipyretic with good clinical improvement.

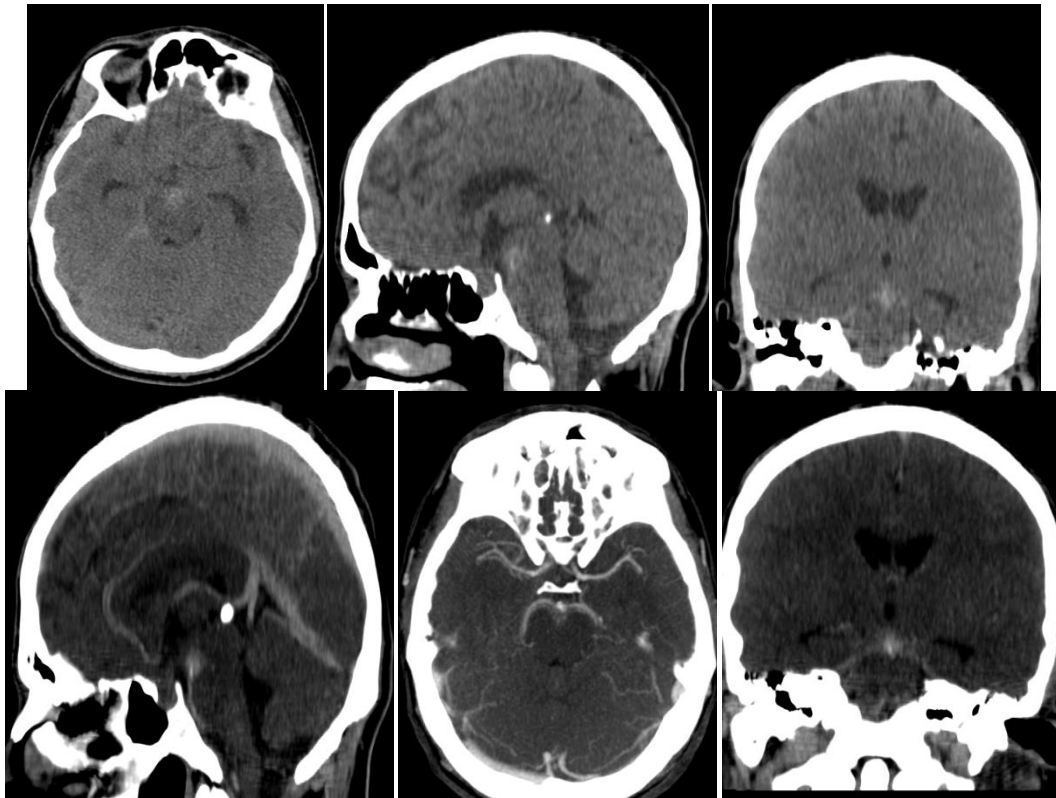


Fig 1: Brain scan without and with injection of PDC in axial sections with coronal reconstruction: In C-: subarachnoid hemorrhage at the level of the inter peduncular cistern; In C+: sacciform aneurysm at the level of the terminal portion of the basilar trunk, rounded, measuring 11x11.4mm

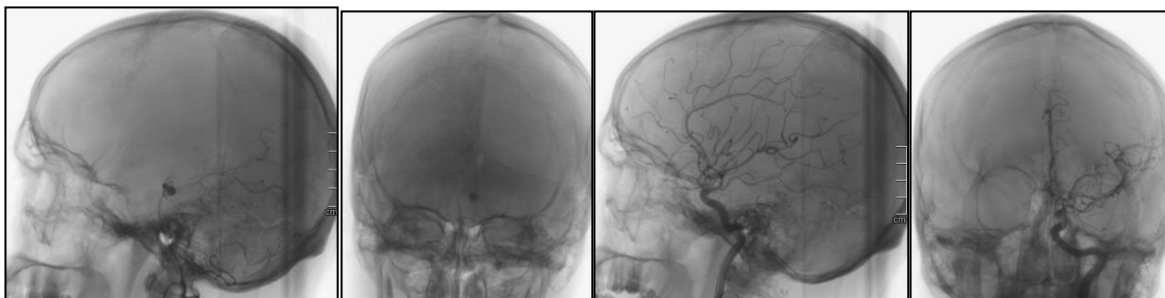


Fig-2: Arteriography: aneurysmal dilation of the terminal portion of the basilar trunk

DISCUSSION

Infectious endocarditis is a rare disease with variable clinical manifestations and is generally difficult to diagnose. It is due to damage of the valvular or adjacent endothelium which is normally non-thrombogenic, thus allowing platelet adhesion and the formation of an initially non-septic thrombus and which, in case of bacteremia, even transient, can give septic vegetations which escape the immune system [3]. Infectious endocarditis can give rise to numerous systemic complications related either to immunological phenomena (immune complexes) or to the migration of septic emboli.

Neurological complications represent a non-negligible entity of general complications, their incidence varying between 10% and 35% depending on the series. Their particularity lies in the fact that they

are life-threatening for the patient and therefore can completely change the management and/or the prognosis [4].

They are secondary to the migration of vegetation into the cerebral circulation, which, depending on its septic nature or not, can give different clinical pictures: ischemic embolic vascular accidents, meningitis, cerebral hemorrhages and brain abscesses [5].

As is illustrated in our case, the patient presented on CT a left ischemic stroke of the territory of the left sylvian artery and a mycotic aneurysm of the M3 branch of the right sylvian artery.

Intracranial mycotic aneurysms [ICMA] or infectious aneurysms are rare and represent less than 10% of the neurological complications of infectious

endocarditis [6, 7]. The septic embolus, localized in the vascular lumen or at the level of the vasa vasorum, creates a suppurative inflammatory lesion of the vascular wall at the level of the intima, which diffuses by contiguity, in and out. Secondary parenchymal ischemic lesions are sometimes observed. The course without treatment is a rupture of the vascular wall, creating a picture of cerebral meningeal hemorrhage. Among the infectious agents capable of causing ICMA, alpha-hemolytic streptococci of the viridans group and *Staphylococcus aureus* are the pathogens most frequently involved (responsible for 50% and 10% of ICMA, respectively) [8]. ICMA are spindle-shaped, irregular with an ill-defined aneurysm neck. They are classically multiple (25% of cases), located distally and at the bifurcations of the sylvian cerebral artery [9]. The clinical manifestations of unruptured ICMA are variable and nonspecific: fever, headache, convulsions and focal deficit

Symptomatic ischemic strokes are reported in 10 to 35% of AEs [10], which was the case in our patient; and represents the most frequent neurological complication: approximately 50% of the neurological complications of AEs are ischemic strokes linked to emboli from vegetations. The clinical consequences depend on the size of the embolus and the area affected. Thus, more than 40% of embolic events in the central nervous system affect the territory of the middle cerebral artery [11]. Two echocardiographic risk factors for an embolic event have been established: the size greater than 10 mm and the mobile nature of the vegetations [12]. Three studies have shown that the incidence of brain emboli is more common in left mitral than aortic endocarditis [13].

The discovery of a cerebral hemorrhagic complication requires defining and treating the cause of the bleeding. It can be intra-parenchymal or subarachnoid, and explained by three main mechanisms: hemorrhagic transformation of an ischemic stroke, rupture of an intracranial mycotic aneurysm and rupture of an intracranial vessel by necrotizing arteritis [12]. Brain MRI, via the T2 * sequence, can detect silent microscopic hemorrhagic lesions, "microbleeds", not visible on CT.

CONCLUSION

Mycotic aneurysm is a rare complication of infectious endocarditis, its course is unpredictable. The presence of a febrile neurologic symptomatology in a patient with or without a prior valvular problem may be suggestive of an infectious endocarditis, thus allowing early diagnosis and well-conducted treatment and considerably improving the prognosis.

Conflicts of Interest: The authors declare no conflict of interest.

Author Contributions: All authors read and approved the final version of the manuscript.

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