LEFT COMMON CAROTID ARTERY RUPTURED MYCOTIC ANEURYSM WITH ISCHAEMIC STROKE IN A PATIENT WITH MYELODYSPLASTIC SYNDROME. A CASE REPORT AND LITERATURE REVIEW

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ABSTRACT

Introduction: A left common carotid artery mycotic aneurysm in a patient with myelodysplastic syndrome was diagnosed due to acute onset of an ischemic stroke in left carotid artery territory, with right palsy and generalized seizure, followed by painful swelling of the left lateral-cervical region and sepsis state after a few hours. CT-scan of the neck confirmed a pseudo-aneurysm of the left internal carotid artery. The surgical intervention detected a ruptured aneurysm with sepsis state, with methicillin resistant Staphylococcus aureus- MRSA and Gram negative germs.

Keywords: ruptured mycotic common carotid aneurysm, stroke, sepsis, myelodysplasia.

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Introduction

The aneurysm of the extracranial carotid artery is a rare entity, but a potential life-threatening event, caused by a localized bacterial or fungal inflammation of the artery. Initial clinical manifestations may be nonspecific and are suitable for diagnosis confusion. Septic embolization with Staphylococcus aureus or other types of germs may occur as a severe complication. The bacterial association with arterial plaque forms a biofilm bacteria, difficult to eradicate with antibiotics.

A few cases of mycotic aneurysm are quoted in studies, related with streptococcal angina, pharyngeal abscess, after carotid stenting or in immunosuppressed patients.

A substantial number of patients (30-60%) develop neurological deficits, the survival rate of which is 50%.

An aggressive treatment, including a surgical one, is always needed to prevent eventual aneurysmal rupture and death.

Case report

A 77 year old man was admitted in the Neurological Department of the Clinical Emergency Hospital, Galati, with an acute mild
right hemiparesis, preceded by a generalized seizure and associating a painful mass in the left neck region.

From personal history, we retain a myelodysplasticsyndrome which had followed corticosteroid treatment (Medrol). At the time of admission, due the evidence of severe anemia and thrombocytopenia the patient required transfusion: hemoglobin – 6.3 g/dl, platelets - 91x10³/µL, white blood cells – 7.28x10³/µL.

The brain computed tomography exam- CT- at the time of admission detects a hypodense area with left ischemic temporal-parietal aspect.

In the following 12 hours after admission, there was fever onset, growth in size of the left lateral-cervical swollen accompanied by local inflammatory phenomena, and the patient started complaining of dysphagia.

An immediate otolaryngology evaluation excludes tonsilar abscess. For this reason, the diagnosis was facing an acute thyroiditis (strum), as an emergency ultrasound evaluation of the affected cervical region described a voluminous formation in the left thyroid lobe region, inhomogeneous, with trasonic areas. We performed a thyroid scintigraphy that showed that the left thyroid lobe had a low capture and it did not present any changes regarding shape or size: fig. 1.

Blood cultures were collected, which subsequently proved to be positive for methicillin resistant Staphylococcus aureus and aerobic and anaerobic germs.

In these conditions, we performed a brain computed tomography exam with contrast substance of the cervical region, which detected and inhomogeneous area in the left latero-cervical region, with intense doses of contrast substance in the central portion, with irregular outline, which was moving the larynx to the right - fig. 2, 3:

![Fig. 1: Thyroid scintigraphy Ant 50K, 55 sec duration: 128x128 pix 1.5mm, 99m Technetium: right thyroid lobe with slightly reduced capture, inhomogeneous distribution of the tracer, left thyroid lobe with reduced capture, inhomogeneous distribution of the tracer without any modification regarding the shape, no "cold" nodules.](image)

![Fig. 2: Computed tomography evaluation with contrast substance of the cervical region: inhomogeneous area with irregular outline, 6.5 mm diameter, which moves the larynx to the right.](image)

![Fig. 3: Computed tomography evaluation of the cervical region, hypodense area in the left latero-cervical region, inhomogeneous, moving the larynx to the right.](image)

With the suspicion of left common carotid artery mycotic aneurysm on which we interfere surgically.

During the surgical intervention, we detect a ruptured mycotic aneurysm, with compressive effect on the neighboring structures with the rupture of the common carotid artery at the bifurcation. We perform aneurysm resection and a carotid-carotid by-pass with a reversed saphenous graft.

The biopsy of the aneurysmal wall fragment shows rich acute granulocyte inflammatory infiltrate and diffuse hematic infiltrate with fibrin deposits - fig. 4, 5.
After the surgical intervention, the evolution was unfavorable, there was a low cardiac output syndrome, bronchopneumonia, followed by cardiac and respiratory arrest and death.

**Discussion**

The term mycotic aneurysm designates an aneurysm caused by a localized bacterial or fungal inflammation of an artery. The aneurysm of the extracranial carotid artery is a rare entity, but a potential life-threatening event. Initial clinical manifestations may be nonspecific and are suitable for diagnosis confusion. Septic embolization with Staphylococcus aureus or other types of germs may occur as a severe complication. Several studies report sepsis states with Staphylococcus aureus, pneumococcal, haemophilus, salmonella, Escherichia coli, proteus mirabilis, Yersinia enterocolitica or undifferentiated germs. But, in the most cases, the bacteria causing the infection can’t be identified.

There are studies that have shown that the bacterial association with arterial plaque forms a biofilm bacteria, which display resistance and manifest unique behaviors, such as biofilm dispersion. The biofilm bacteria, aggregated in cell clusters encased in a matrix, are difficult or impossible to eradicate with antibiotic, despite the fact that they are susceptible to killing. So, the involvement of biofilm bacteria may contribute to plaque destabilization.

In addition to the role of bacteria in the destabilization of arterial plaque, other factors could also contribute to thrombogenesis: IFN-γ, granulocyte-macrophage colony-stimulating factor, C-reactive protein (which contributes to inflammation and tissue damage within atherosclerosis).

A mycotic aneurysm may occur after a streptococcal angina or pharyngeal abscess in children with thrombophlebitis of the internal jugular vein (Lemierre’s syndrome). It can also occur after carotid stenting, or in immunosuppressed patients, whose sepsis state are associated in other studies with the previously mentioned germs. Other cases of mycotic aneurysm are quoted to occur in people with injectable drugs dependence or patients with bacterial endocarditis.

A few cases of mycotic aneurysm are also quoted in other studies: in 2012, Pirvu described about 20 cases reported every decade over a period of 30 years, whereas Shah et al. quoted 37 cases of surgical intervention on extracranial carotid aneurysm.

The bifurcation of the common carotid artery is the most frequent site of aneurysmal formation. Aneurysms infected with Gram negative germs have a rupture rate of 83%, while the Gram positive infected aneurysm has a rupture rate of 10%. Duplex examination and computed tomography scan with angiography are important in confirming the diagnosis.

A substantial number of patients (30-60%) develop neurological deficits, the survival rate of which is 50%.

An aggressive treatment, including a surgical one, is always needed to prevent eventual aneurysmal rupture and death. Saphenous vein interposition is the elective procedure, but also the most difficult, associated with long term antibiotic therapy according to the antibiogram and antifungal treatment. It can also proceed to carotid ligation, but the risk of stroke is higher in this situation.
Conclusions

Mycotic aneurysm of the common carotid artery is a rare condition, which can complicate the evolution of a patient with myelodysplastic syndrome.

The aneurysm can be accompanied by a sepsis state, in our case, by MRSA and aerobic and anaerobic germs.

Initially, the patient with mycotic aneurysm developed a left carotid ischemic stroke with right hemiparesis and generalized convulsive seizure onset. Brain computed tomography evaluation has shown an ischemic area in the left carotid territory, without the aspect of a brain abscess. There were no clinical or paraclinical aspects suggestive for septic brain embolism.

The existence of a painful latero-cervical lump caused by the presence of the aneurysm may lead to diagnosis confusions in the first hours since the onset, in our case, initially taking into account the existence of an acute thyroiditis.

It is urgently necessary to establish an early diagnosis, to rapidly initiate an aggressive treatment, in order to prevent the progression of the disease or an aneurysmal rupture.

The surgical intervention with the election method of aneurysm resection and carotid-carotid bypass with saphenous vein graft was not enough to save the patient’s life who had compromised immunity and severe anemia. Cause of death was bronchopneumonia and cardiac and respiratory arrest.

Although rare, cases of mycotic aneurysm of the carotid artery in the extracranial segment should be considered in patients with painful swelling in the latero-cervical region, associated with neurological signs, especially in patients from the previously mentioned categories.

In the literature, we did not find any case report in a patient with mycotic aneurysm associated to a myelodysplastic syndrome.

References


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