

Mycotic pseudoaneurysm of common carotid artery mimicking parapharyngeal abscess

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Abstract

In this case a secondarily infected pseudoaneurysm of the common carotid artery presented with clinical features suggestive of a parapharyngeal abscess. The causative organism was identified as community-acquired methicillin-resistant *Staphylococcus aureus*. To the authors' knowledge this condition not previously been reported.

Key words: Carotid Artery, Common; Aneurysm; Staphylococcus; Methicillin Resistance

Case report

An 88-year-old man was referred to the Department of Otolaryngology with a four-week history of a lump in the left side of the neck. There had been a sudden increase in its size in the 24 hours prior to his presentation. There was no history of recent infection in the pharynx or elsewhere. It was noted that the patient had suffered a minor fall some weeks previously, followed by persistent pain in the left side of the neck. He was generally frail with mild cardiorespiratory compromise and recent weight loss of unknown cause.

Examination revealed an afebrile patient with a pulsatile swelling, 9 cm in diameter, in the left anterior triangle extending beneath the angle of the mandible. No lymphadenopathy was identified. On inspection of the oropharynx and hypopharynx, a swelling could be seen behind the left posterior pillar down to the piriform fossa.

Haematological investigation showed a white cell count of $36 \times 10^9/L$ with a neutrophilia. A chest X-ray performed was unremarkable. Fine needle aspiration of the lump revealed pus. The patient developed stridor soon after needle aspiration had been performed. This was associated with a limited degree of expansion of the swelling. The causative organism was later identified as MRSA on culture and sensitivity studies.

On the basis of these findings, the working diagnosis was one of neck space abscess, possibly complicated by carotid aneurysm. Treatment was commenced with intravenous antibiotics and an urgent contrast enhanced computed tomogram of the neck requested prior to proceeding with surgery.

The computed tomogram identified the lesion as a large left parapharyngeal mass with central enhancement of a blood pool and surrounding necrotic material (see Figure 1). This would be consistent with a mycotic false aneurysm of the common carotid artery.

Immediately following the scan the patient suffered a short episode of respiratory distress followed by a brief period of recovery. This was quickly succeeded by respiratory arrest and death.

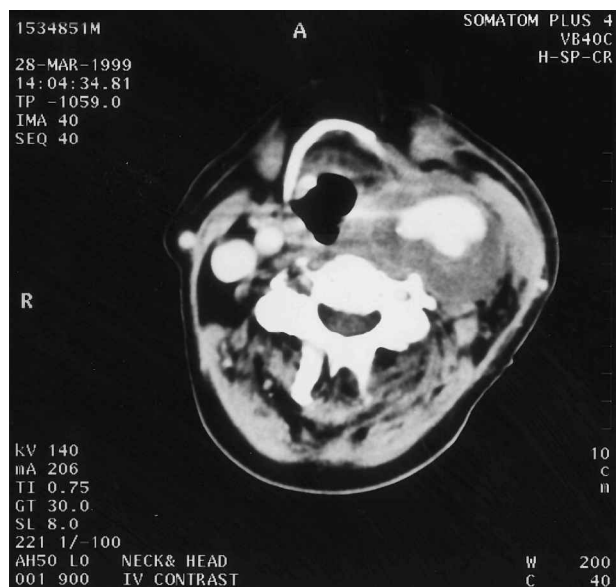


FIG. 1

Axial computed tomogram of neck at hyoid level, with contrast.

Post mortem examination confirmed the neck lesion to be a pseudoaneurysm of the common carotid artery with surrounding suppuration causing tracheal compression.

Discussion

Mycotic aneurysms may arise in almost any artery in the body and are extremely rare in the extracranial carotid artery.¹ The term 'mycotic' was adopted by Osler² in 1885 but is a misnomer since the vast majority are bacterial and not fungal in origin.

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They may arise by one of the three pathological processes; due to a primary microbial arteritis, by direct spread from adjacent structures or by metastatic spread from a distant site of infection.

Most reported cases of primary microbial arteritis leading to aneurysmal change were caused by syphilis and tuberculosis. The incidence has fallen dramatically since the widespread use of effective antibiotics. The carotid artery is seldom the site affected in such cases.³

Direct spread of infection, i.e. from an extravascular source, is more commonly seen now. Over 36 cases have been reported in the literature since 1933. A review of vascular complications of neck space infections by Salinger and Pearlman the same year⁴ illustrated the importance of recognizing clinical signs indicative of sepsis having spread to local blood vessels – a solution demanding urgent intervention. The internal carotid artery is involved more often than any major vessel.⁵

Causative organisms in deep neck space infection include *Streptococcus*, *Staphylococcus*, *Bacteroides*, *Micrococcus* and *Neisseria* spp.⁶ More recently, the incidence of hospital-acquired MRSA infections is increasing due to the widespread use of broad spectrum antibiotics. These may follow iatrogenic invasive procedures or less commonly penetrating neck wounds. However, they are now being seen in the community amongst intravenous drug abusers.⁷ The antibiotic used in the treatment of such cases has been shown to have no significant effect on clinical outcome. Surgery is the management of choice.

Salmonella and *Klebsiella* species have also been encountered as a notable cause of mycotic aneurysms in intravenous drug abusers.⁸ The elastase-producing nature of these microorganisms clearly potentiates genesis of the aneurysm.

The third mode of establishing sepsis in an aneurysm is by metastatic spread. It occurs by carriage of the microorganism in the circulation and subsequent colonization of a site distant to the origin of infection. Mycotic aneurysms developing in this way tend to present in the setting of generalized sepsis such as post-operative infection, septicaemia or bacterial endocarditis.⁹ Again, the most frequently occurring causative organism is *Staphylococcus* sp.

The pathogenesis of the mycotic pseudoaneurysm in the case reported is unclear. Neither a local nor a distant source of sepsis was identified at any time. It appears the pseudoaneurysm preceded the infection. Its aetiology is most likely to have been contributed to by degenerative change and precipitated by trauma. If this is the case, the MRSA secondarily caused infection in the existent haematoma.

It has already been mentioned that the incidence of MRSA is increasing both in the community and as a cause of mycotic aneurysm by direct spread from local soft tissue infection. Here it would appear reasonable to suggest the bacterium was colonizing an unidentified distant site, in the absence of any clinical manifestation at that site. The subsequent infection of the pseudoaneurysm produced a clinical picture not dissimilar to that seen in a deep neck space infection complicated secondarily by development of a local aneurysm.

With respect to the management of cases presenting in this way, we believe this is a powerful illustration of the need to carry out adequate diagnostic imaging procedures prior to incision and drainage of a presumed deep neck space infection. Indeed, caution should clearly also be exercised prior to fine needle aspiration of any pulsatile neck mass in order to avoid precipitating complications.

Regarding investigation, ultrasound alone provides insufficient information on which to plan management decisions. Computed tomography or magnetic resonance imaging should be the *immediate* investigations of choice. High quality digital subtraction angiography defines the vascular anatomy very well and allows more detailed planning of treatment.

Management decisions result from liaison between the otolaryngologist, the vascular surgeon and the vascular radiologist. Antibiotics are administered and ligation of the vessel carried out, with excision of infected tissues. Where there is involvement of the common or internal carotid artery, reconstruction should be undertaken using autologous graft tissue.¹

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