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Lemierre's syndrome: a complication of acute oropharyngitis

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Abstract
Lemierre's syndrome is a recognized but infrequently seen complication of acute oropharyngitis. In this case report the patient presented with acute sore throat that led to a bacteraemia with internal jugular vein thrombosis and subsequent cranial nerve palsies.

Key words: Oropharynx; Infection; Bacteraemia; Jugular veins; Thrombosis

Case report

A previously fit and healthy 37-year-old Caucasian female was admitted to the medical ward of a district general hospital with a history of fever, malaise and sore throat of a few days duration. A diagnosis of acute tonsillitis was made and intravenous penicillin and metronidazole commenced. She remained pyrexial despite four days of treatment during which period blood cultures were performed. She was then referred on to the ENT department.

On examination, the patient was acutely ill with a temperature of 38.5°C and intermittent rigors. Both tonsils were moderately enlarged and inflamed with a normal peritonsillar area. There was a diffuse tender swelling along the left sternocleidomastoid muscle with spasm of the same. The rest of the ENT examination was normal. She was admitted to ENT and an ultrasound of the neck was performed.

No abscess formation was found on the ultrasound examination but it revealed thrombosis of the left internal jugular vein with thickening of the left sternocleidomastoid muscle. Intravenous anticoagulation was commenced and a high dose of penicillin and metronidazole continued. Blood results showed no leucocytosis but *Fusobacterium necrophorum* was found on blood cultures and sensitivity to penicillin and metronidazole was confirmed. In view of her clinical presentation and blood culture findings the microbiologist suggested that this might be a case of Lemierre's syndrome.

The patient's general condition and sore throat improved. There was no progression regarding the tender cervical swelling. On day seven following admission to ENT she acutely developed hoarseness due to a left vocal fold palsy. Flexible endoscopy confirmed total immobility of the left vocal fold (Figure 1). The cranial nerve function was otherwise normal. Reassessment of her cranial nerve function on the following day indicated the onset of left-sided accessory nerve palsy with weakness of the left sternocleidomastoid and trapezius muscle (Figure 2).

A subsequent magnetic resonance image (MRI) scan excluded the presence of intracranial empyema, focal inflammation or micro-abscesses in the posterior fossa. The

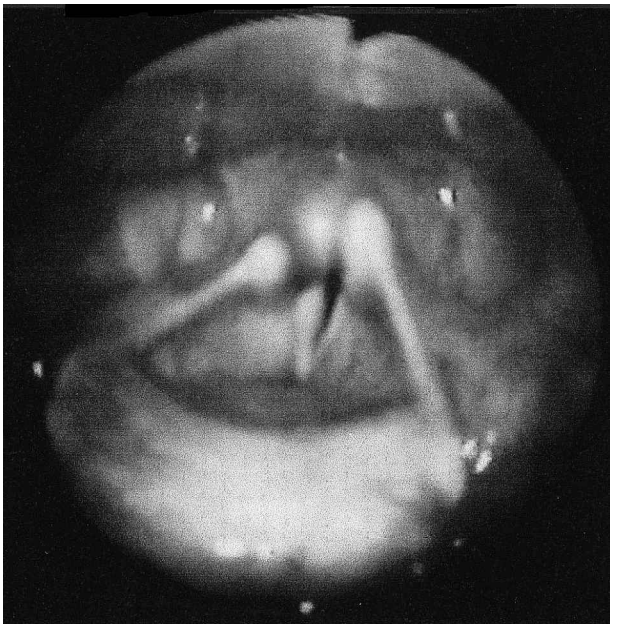

Fig. 1

Flexible endoscopic view of left vocal fold palsy, taken during phonation. Right vocal fold in full adduction.

scan confirmed left internal jugular vein thrombosis (Figure 3). A MRI venogram indicated extension of the thrombus into the left sigmoid sinus. It confirmed normal blood flow in the central and sagittal venous sinuses (Figure 4).

A regular evaluation established no further development of cranial nerve palsies and gradual resolution of the cervical swelling. Her general condition completely stabilized and she remained apyrexial. She was discharged two weeks after her admission to ENT.

Approximately six weeks following the initial onset of her symptoms, a slight improvement of vocal fold mobility was noted. The accessory nerve function, however, was unchanged.

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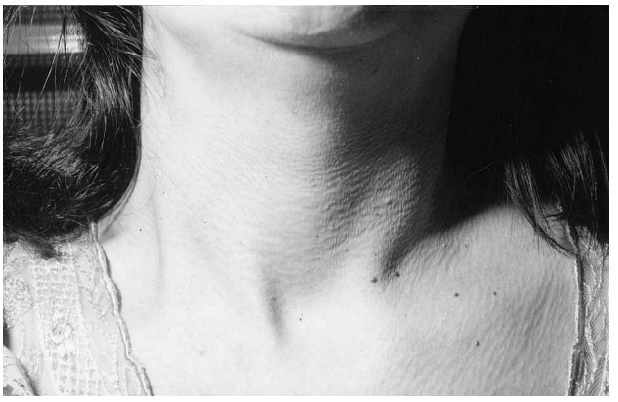

FIG. 2
Photograph of the neck illustrating asymmetrical sternocleidomastoid contraction.

A final review appointment two months later indicated normal vocal fold movement and normal accessory nerve function.

Discussion

In this antibiotic era, acute tonsillitis seems a trivial condition to treat but rarely it can lead to life-threatening complications, that if not diagnosed and treated early can be disastrous. Lemierre's syndrome or post-anginal septicaemia is one of them.

In 1936, Lemierre[1] described septicaemia as a consequence of oropharyngitis. He identified the causative organism as *Bacillus funduliformis,* now known as *Fusobacterium necrophorum,* a Gram negative anaerobic rod and described the symptoms and signs, which are very characteristic to Lemierre's syndrome.

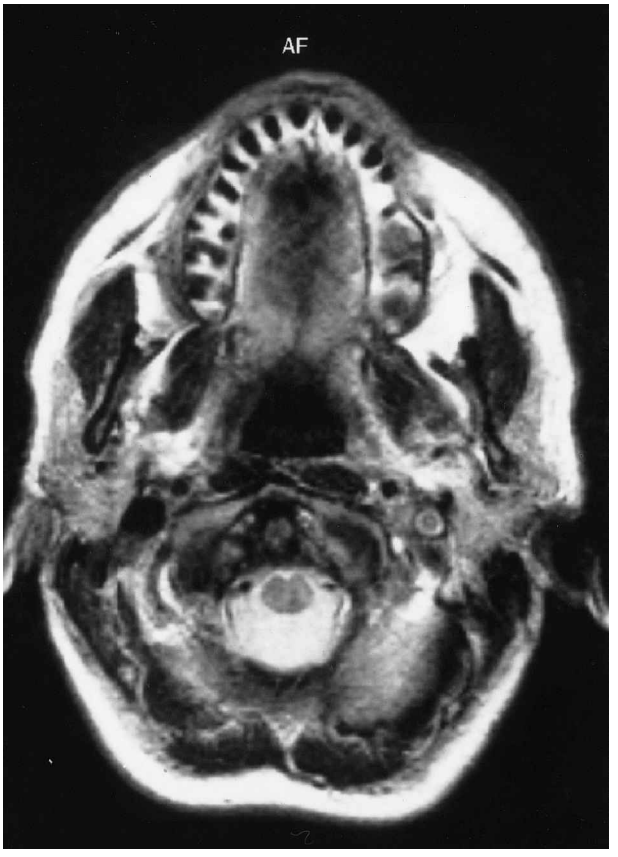

FIG. 3
MRI scan indicating thrombus with some circumferential venous flow in left internal jugular vein.

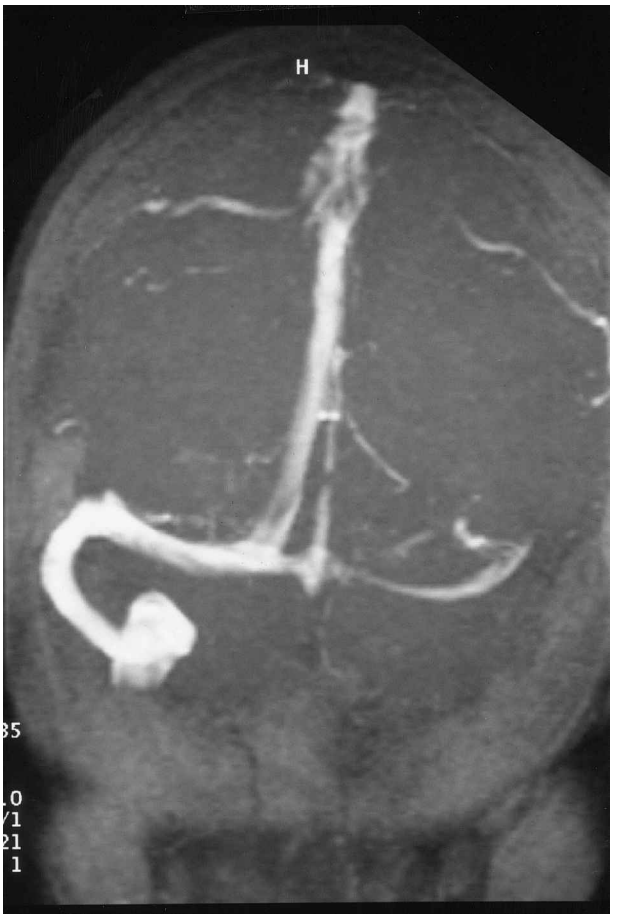

FIG. 4
MRI venogram showing impaired flow in left sigmoid sinus.

Lemierre's syndrome is usually seen in previously fit and healthy young adults. Symptoms start with sore throat, dysphagia, dental pain or neck swelling and pain, progressing to fever with chills and rigors suggesting septicaemia. Clinical examination reveals oropharyngitis with neck swelling and tenderness due to thromophlebitis.[2–8] Other than venous thrombosis, manifestations may include metastatic septic emboli in the lungs[5] the brain[7] or the bones and joints.[3,8]

The white blood cell count may be normal or raised. Blood culture is confirmatory and usually grows Gram negative anaerobic rods of *Fusobacterium necrophorum* commonly found as normal oral flora, once teeth have erupted, in the gastrointestinal tract and in the genitourinary tract in females.

The suspicion of Lemierre's syndrome should prompt investigation for internal jugular vein thrombosis, that can be revealed by USG.[8] A computed tomography (CT) scan or MRI scan can also be used to assess the extent of internal jugular vein thrombosis[2,5] and the presence of micro-abscess formation.

Management includes prolonged intravenous antibiotics. *Fusobacterium necrophorum* is usually sensitive to penicillin, metronidazole and clindamycin. Anticoagulant therapy has been tried in many cases but its efficacy has not yet been established. Ligation or resection of the internal jugular vein is generally not recommended.

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In this particular case, the cranial nerve paralysis was assumed to be due to toxic neuritis, associated with inflammation, rather than neuro-compression in the jugular foramen or sheath. Despite the development of thrombophlebitis, the inflammatory process did not disseminate to micro-abscess formation almost certainly due to early appropriate antibiotic treatment. Anticoagulant therapy could prevent further progression of the thrombophlebitic process, that could in this case have lead to sagittal, medullary and basilar venous thrombosis.

We feel that early recognition of a less common complication arising from oropharyngitis relies on a high index of suspicion. Early diagnosis and treatment is essential to secure a favourable outcome.

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