Fusobacterium necrophorum pharyngitis complicated by sepsis and extrapharyngeal dissemination in two young adults

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Dear Sir,

A Gram-negative anaerobe, *Fusobacterium necrophorum* (*F. necrophorum*), is part of the normal flora of the oral cavity and the gastrointestinal and urogenital tracts.\(^{(1)}\) It is increasingly noted as a cause of pharyngitis in young adults.\(^{(2)}\) Secondary extrapharyngeal extensions can sometimes manifest. These include thrombophlebitis of the internal jugular vein, known as Lemierre’s syndrome, and septic embolisation to other organs.\(^{(1)}\) Herein, we report two cases of fusobacterial pharyngitis further complicated by extrapharyngeal manifestations.

**Case 1** is a 19-year-old man who presented with a two-day history of fever, sore throat, and dyspnoea. On examination, he had bilaterally enlarged exudative tonsils and diffuse tender lymphadenopathy. His lung fields were clear on auscultation. Blood cultures isolated *F. necrophorum*. The patient was found to be hypotensive (75/38 mmHg) at the emergency department and was admitted to the high-dependency unit. Empiric antibiotics (intravenous amoxicillin-clavulanate) and inotropic support (intravenous dopamine) were administered. Contrast-enhanced computed tomography (CT) imaging of the neck revealed bilateral palatine tonsillar enlargement (Fig. 1a) but did not reveal filling defects in his neck veins. CT imaging of the chest was notable for patchy consolidations in both lower lung lobes and nodules in the right upper lobe and lingula, suggestive of an infection (Fig. 1b). The patient completed treatment with intravenous antibiotics for six days with improvement, but self-discharged against advice and was prescribed with a further four weeks of oral amoxicillin-clavulanate. However, he was subsequently lost to follow-up.

**Case 2** is a 25-year-old man who presented with a two-week history of fever, chills and rigour. He had previously presented for fever and sore throat to his general practitioner, who had prescribed amoxicillin. The patient took it for four days prior to admission without good response. On admission, he was febrile (39.3°C), tachycardic (140 bpm) and hypotensive.

Tay et al. *Fusobacterium necrophorum* pharyngitis complicated by sepsis and extrapharyngeal dissemination in two young adults. [https://doi.org/10.11622/smedj.2022084](https://doi.org/10.11622/smedj.2022084)
Tay et al. *Fusobacterium necrophorum* pharyngitis complicated by sepsis and extrapharyngeal dissemination in two young adults. https://doi.org/10.11622/smedj.2022084

(106/59 mmHg). Minimal pharyngeal congestion was noted. There was no cervical lymphadenopathy, hepatosplenomegaly or abdominal tenderness. His lungs were clear on auscultation. Laboratory tests were remarkable for leucocytosis; liver function test was deranged, with an elevated alkaline phosphatase of 145 U/L and gamma-glutamyl transferase of 267 U/L. CT showed a small right pleural effusion but no septic emboli or consolidation, and no filling defects in his neck veins. However, multiple rim-enhancing hypodense lesions (1.0–1.2 cm in size) in both liver lobes consistent with liver abscesses were found (Fig. 1c). Blood cultures isolated *F. necrophorum*; the patient completed treatment with metronidazole for 6.5 weeks and achieved complete recovery and resolution of his liver abscesses on repeat imaging.

*F. necrophorum* is increasingly being recognised as a pathogen causing bacterial pharyngitis in young adults (as opposed to young children, in whom *Streptococcus pyogenes* is more common). A study conducted in a university health clinic consisting of patients aged 15–30 years with pharyngitis found that 20.5% of those with pharyngitis were positive for *F. necrophorum* by polymerase chain reaction. It is likely to be underappreciated, as routine throat cultures will fail to identify *F. necrophorum* given that throat samples are inappropriate for anaerobic cultures, and molecular testing for *F. necrophorum* is not routinely available.

While controversial, one theory for its resurgence has been postulated to be the decreased use of empiric antibiotics for oropharyngeal infections. As observed in our Case 1, some individuals can present with respiratory symptoms, as *Fusobacterium* pharyngitis commonly metastasises to the lungs. Appropriate imaging modalities such as CT of the chest can reveal findings including lobar consolidation and multiple peripheral lung nodules secondary to septic embolisation. Conversely, Case 2 highlights a rarer manifestation of fusobacterial liver abscesses following pharyngitis; besides pharyngitis, other risk factors may include periodontal disease. Other risk factors usually associated with pyogenic liver abscess such as malignancy
and older age are not associated with fusobacterial liver abscess.\(^{(6)}\) Up to an estimated 15% of \textit{Fusobacterium} infections may be resistant to penicillin owing to the production of beta-lactamases; therefore, metronidazole and beta-lactam-beta-lactam inhibitor combinations (e.g. amoxicillin-clavulanate) are recommended and usually associated with good clinical response.\(^{(7)}\)

In conclusion, these two cases highlight the need to consider fusobacterial pharyngitis and disseminated infection as a differential in young adults with sore throat and deteriorating status. Not all cases with bacteraemia and disseminated infection may be associated with septic jugular thrombophlebitis (Lemierre’s syndrome). Early recognition and treatment are imperative because of the possible extrapharyngeal sequelae and high morbidity/mortality in the absence of antimicrobial treatment.

Yours sincerely,

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Tay et al. \textit{Fusobacterium necrophorum} pharyngitis complicated by sepsis and extrapharyngeal dissemination in two young adults. \url{https://doi.org/10.11622/smedj.2022084}
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FIGURES

Fig. 1 (a) Case 1: CT image of the neck shows bilateral palatine tonsillar enlargement with underlying rim-enhancing collection in the right tonsil, suggestive of acute suppurative tonsillitis. (b) Case 1: CT image of the thorax shows patchy consolidations in both lower lung lobes and nodules in the lingula suggestive of an infection. (c) Case 2: CT image of the abdomen and pelvis shows multiple rim-enhancing hypodense liver abscesses in both lobes.

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