Late Presentation of 'Lemierre's Syndrome': How A Delay In Seeking Healthcare And Reduced Access To Routine Services Resulted In Widely Disseminated *Fusobacterium Necrophorum* Infection During The Global COVID-19 Pandemic

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Abstract

The SARS-CoV-2 outbreak has disrupted the delivery of routine healthcare services on a global scale. With suspension of non-essential healthcare services, there is a risk that patients with treatable illnesses do not receive prompt treatment, leading to more serious and complex presentations at a later date.

Lemierre's syndrome is a potentially life-threatening and under-recognised sequela of an oropharyngeal or dental infection. While there is no universally accepted definition, it is typically characterised by septic embolisation of the gram-negative bacillus *Fusobacterium Necrophorum* to a variety of different organs, most commonly to the lungs. Thrombophlebitis of the internal jugular vein is frequently identified.

We describe an atypical case of Lemierre's syndrome involving the brain, liver, elbow joint and lungs following a dental infection in a young male who delayed seeking dental or medical attention due to a lack of routine services and concerns about the SARS-CoV-2 outbreak.

Case presentation

A 24-year-old man presented to the emergency department during the SARS-CoV-2 pandemic reporting a three-week history of headache, myalgia, left leg weakness, abdominal pain and anorexia. He also described shortness of breath, unstable gait and right elbow pain.

He had recently suffered with periodontal swelling and pain, describing it as a 'dental abscess'. He had not sought dental services at this time, and had subsequently delayed seeking medical attention, citing concerns about attending hospital due to the risk of contracting SARS-CoV-2.

He had no medical history of note, and no history of high-risk sexual activity or IV drug misuse.

Examination

Examination revealed a resting tachycardia, tachypnoea, right basal crepitations, generalized abdominal tenderness, and left lower limb weakness. The right elbow was swollen and tender. Oral exam revealed extensive dental decay. No neck swelling or pain was reported.

Investigations

FBC - Hb 9.9g/dL, Plt 104x10^9/L, WCC 7.3x10^9/L

LFTs - AST 120iU/L, ALT 103iU/L, Br 37umol/L, alb 25g/L

Other - CRP 194mg/L, D-dimer 1987ng/mL

CT TAP – multifocal hepatic abscesses and multiple septic emboli throughout the lungs (Fig 1)

MRI brain – multifocal brain abscesses (Fig 2)

Transthoracic echo – no vegetations, patent foramen ovale

CT angio of neck – bilateral dental abscesses

Repeat CT angio of neck – filling defect within left internal jugular vein suspicious for thrombus (Fig 3)

Blood cultures – gram negative bacilli (*F Necrophorum*)

Treatment

Antimicrobial therapy – ceftriaxone, vancomycin, metronidazole initiated on admission

Consultations – infectious disease, cardiology, haematology, maxillofacial surgeons, orthopaedics

Transfer to ICU – developed T1RF on day two of admission, requiring intubation for 18 days

Interventional radiology – drainage of liver abscesses

Anticoagulation – therapeutic dose enoxaparin (switched to apixaban upon discharge)

Dental procedure - extraction of two retained dental roots and six decayed teeth

Outcome / Follow-up

After three weeks in ICU and a further two weeks of ward-based rehabilitation as an inpatient, our patient was afebrile, symptom-free, and mobilising with one crutch. Repeat imaging demonstrated marked improvement in the hepatic abscesses. He was discharged home to continue intravenous ceftriaxone and oral metronidazole via the outpatient parenteral antimicrobial programme (OPAT), with plans to continue his anticoagulant therapy for three months.

Discussion/Learning Points

1. Lemierre's syndrome can give rise to septic emboli involving multiple organs, including lungs, liver, brain, bone, soft tissue, and joints[1, 2]. It should be considered in cases of disseminated infection of unknown origin
2. Recommended treatment involves antimicrobial therapy with a beta-lactam agent and metronidazole for 3-6 weeks[2]. Drainage of abscesses (if accessible) and source control should also be considered[3]
3. Brain abscesses are thought to result from retrograde intracranial extension of IJV thrombosis[2]. Our case is unusual, as intracranial involvement preceded radiological evidence of IJV thrombosis, suggesting an alternative route of seeding (perhaps via the PFO)
4. The role for anticoagulation in Lemierre's syndrome is unclear[4]. Due to the temporal association between the IJV thrombosis and insertion of an intravascular catheter device in our case, a three-month period of anticoagulation was deemed appropriate and was well tolerated
5. This case highlights the importance of providing medical and dental services during a public health emergency or pandemic; failure to do so may result in hospital admissions with severe illnesses that might otherwise have been treatable in an outpatient setting.

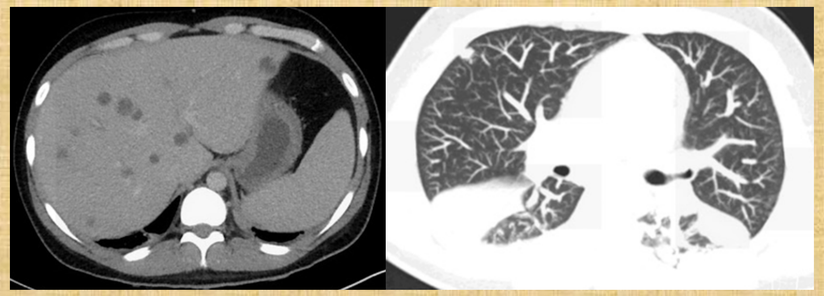

Figure 1. CT TAP showing liver and lung involvement

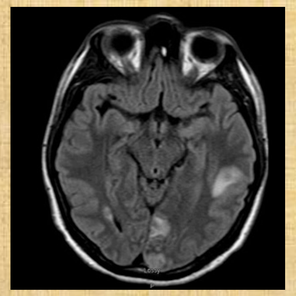

Figure 2. MRI brain

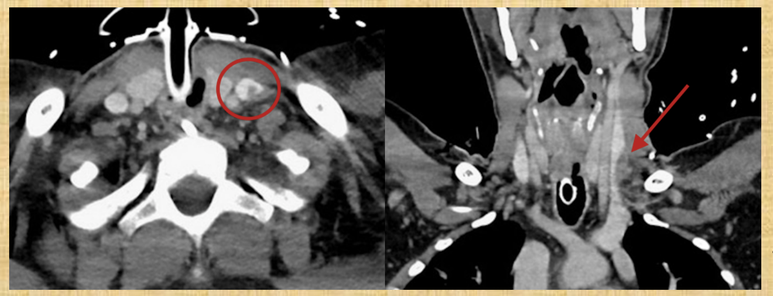

Figure 3. CT Angio of neck showing IJV filling defect

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