Necrobacillosis- Beyond Lemierres's Syndrome

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CLINICAL CASE

A 53 year old man presented to Cork University Hospital in early September 2020 with fulminant sepsis secondary to necrotising fasciitis of the right thigh with an associated gluteal abscess. This was preceded by a one week prodrome of diarrhoea, radicular-type leg pain and intermittent fevers. There was no proceeding trauma, inoculation injury, co-morbidities or immune suppression. He underwent urgent surgical débridement and empiric antimicrobial agents were commenced. *S.anginosus* and *F.necrophrorum* were isolated from blood cultures collected upon presentation. Atypical Lemierre's syndrome was initially considered early in the clinical course. Culture of tissue samples from the right thigh were polymicrobial. *S.anginosus* and MDRO *P.aeruginosa* were cultured. Focused antimicrobial therapy with IV co-amoxiclav, IV metronidazole and ciprofloxacin was commenced. This gentleman underwent extensive imaging, colonoscopy and additionally was reviewed by ENT and maxillofacial services. No precipitating aetiology event was found.

Two weeks into admission, MRI brain was performed due to an evolving encephalopathy. Limited MRI imaging of the upper cervical spine provoked a whole spine MRI which demonstrated a new epidural abscess extending vertebral levels C1-L5.

Planned neurosurgical intervention drained some pus from the epidural space. Samples of this pus were sent for culture and susceptibility testing. Routine and extended culture failed to yield any organisms.16s rRNA sequencing was performed and demonstrated *Prevotella oris*. The patient required prolonged antimicrobial therapy in addition to extensive neuro-rehabilitation which is currently on going. During his inpatient stay, multiple RT-PCR tests for SARS-CoV-2 were performed on samples from this patient (surveillance and admission screening). SARS-CoV-2 was not detected on any occasion.

In December 2020 Wolff *et al.,* reported a case series of four individuals with acute SARS-CoV-2 and *Fusobcaterium spp.* bacteraemia (1). This report prompted SARS-CoV-2 antibody testing in this gentleman, and these were found to be positive (1). A careful clinical history revealed that this man and family household had symptoms consistent with acute SARS-CoV-2 in April 2020, but were not tested at the time. Additionally, this man reported being a contact of a confirmed SARS-CoV-2 case prior to symptom onset in April 2020.

DISCUSSION

Emerging data suggest gastrointestinal tract invasion by SARS-CoV-2 can be associated with an inflammatory dysbiosis. This may correlate with a more severe clinical course in COVID-19 patients. A recent study by Tao *et al.*, has demonstrated reduced diversity of the of gut microbiome in COVID-19 patients in additional higher faecal levels of IL-18 relative to healthy individuals (2). These findings indicate that SARS-COV-2 may potentially induced a inflammatory cytokine response in susceptible populations.

Additionally, metagenomic studies of COVID-19 patients have signalled higher rates of cariogenic and periodontopathic bacteria in comparison to the healthy population. These data further support the potential association between COVID-19 complications and the microbe of the gastro-intestinal tract (3). It is hypothesised that SARS-CoV-2 infection predispose to a secondary inflammatory response which can promote translocation of opportunistic pathogens. We postulate that this was the primary aetiology factors in this patient's case.

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