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Introduction

Clostridium perfringens is an organism that may cause significant human disease. It commonly causes outbreaks of food-borne illness and skin and soft tissue infections (SSTI). *C. perfringens* causes SSTI in three discrete clinical entities; simple wound colonisation or contamination, anaerobic cellulitis, and clostridial gas gangrene. Less commonly, it can cause bacteraemia, and such cases are associated with significant mortality¹. *C. perfringens* spores may lay dormant for several years after initial infection and cause significant disease, including clostridial myonecrosis, upon germination of the dormant spores². We present the case of an elderly man who presented with recurrent *C. perfringens* anaerobic cellulitis two years after being treated for a similar episode.

History of Presenting Illness

An 80 year old man presented with a five week history of a painful rash affecting the right lower limb, extending from below the knee upwards to the upper inner thigh. His past medical history was significant for complete congenital hearing loss, mutism, lower limb lymphoedema, ischaemic heart disease, chronic kidney disease stage 3 and gout. Of note, he had also had a previous admission four years earlier with a similar episode, on which occasion he presented with a diffuse cellulitis affecting both lower limbs. Blood cultures were performed on the first admission, which demonstrated that the patient had a *C. perfringens* bacteraemia. He subsequently recovered from this episode, and was well until his representation.

Hospital Course

On examination, the right leg was found to be extremely tender, with raised red patches and pustules on the overlying skin, blisters, and crepitus on palpation. The patient was tachycardic, tachypneic and hypotensive and blood results showed a white cell count of 20.4 and CRP of 342. Given the presentation and the patient's poor clinical condition, there was concern for necrotising fasciitis, and urgent wound exploration and debridement was recommended by the on-call surgical team; however, the patient refused surgical intervention, and so the case was managed conservatively. He was admitted to the high dependency unit and was deemed unsuitable for cardiopulmonary resuscitation given his advanced age and low likelihood of surviving the infection without definitive surgical management. CT of the lower limbs showed fat attenuation and fascial thickening of the upper right thigh, with marked fat



stranding in all three muscular compartments below the knee. This was managed with broad spectrum antimicrobials including clindamycin and meropenem. Within two days of admission he had made a dramatic clinical improvement and was transferred to the ward, and subsequently discharged home after a prolonged antibiotic course.

Discussion

On his most recent admission, the patient grew multiple organisms from the lower limb wound swab. However, the previous infection with *C. Perfringens* affecting the same area two years prior, the atypical wound appearance and the radiological findings suggest that *C. Perfringens* was the culprit organism. *C. Perfringens* can present on a continuum between anaerobic cellulitis and necrotising fasciitis. Although there were clinical and radiological features of necrotising fasciitis, the patient's rapid clinical improvement following the administration of antibiotics suggest anaerobic cellulitis. Furthermore, a true necrotising fasciitis would not usually be cured without definitive surgical intervention³. We suspect that spores from the prior infection with *C. Perfringens* two years earlier became reactivated, causing the second episode of cellulitis.

Conclusion

This atypically presenting cellulitis is most likely the result of an anaerobic cellulitis caused by *C. Perfringens*, given the patient's history of colonisation by the same organism, and the swift and complete response to conservative treatment. This case study highlights several unique features of *C. Perfringens* skin infection.