CASE REPORT

Acute suppurative parotitis caused by *Streptococcus pneumoniae* in an HIV-infected man

Luis Guzman Vinasco, Sara Bares, Uriel Sandkovsky

Department of Infectious Diseases, University of Nebraska Medical center, Omaha, Nebraska, USA

Correspondence to
Dr Uriel Sandkovsky,
usandkovsky@unmc.edu

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SUMMARY

We report a case of a 32-year-old man who presented with progressive unilateral parotid gland enlargement and subsequently tested positive for HIV. A CT scan of the neck performed with contrast showed a phlegmon in the region of the right parotid tail measuring approximately 2.5×2.4 cm. Cultures of the aspirated fluid grew *Streptococcus pneumoniae* and the *S. pneumoniae* urinary antigen test was also positive. The patient underwent surgical debridement and received antimicrobial therapy with complete resolution of the parotitis. Parotitis caused by *S. pneumoniae* is rare, and HIV infection should be suspected in any case of invasive pneumococcal disease.

BACKGROUND

Acute suppurative parotitis (ASP) is an uncommon infection usually seen in children younger than 2 months or the elderly.^{1,2} *Staphylococcus aureus* is the most frequently isolated pathogen, although streptococci including *Streptococcus pneumoniae*, Gram-negative rods and anaerobic bacteria have all been implicated.¹ Patients with HIV infection, especially those with CD4 count <200 cells/mm³, are at increased risk for invasive pneumococcal disease. Pneumonia is the most common manifestation, but bacteraemia, meningitis, endocarditis, mediastinitis and brain abscesses have been reported as well.^{3–6} Three cases of *S. pneumoniae* ASP in the setting of HIV infection have been reported in the literature.^{3,7,8} We describe a patient who presented with suppurative parotitis and was subsequently found to be infected with HIV.

CASE PRESENTATION

A 32-year-old Caucasian man with a medical history significant for hypertension and tobacco use visited his primary care physician after developing progressive swelling, erythema and tenderness in the area of his right parotid gland over the course of 4 weeks. He was referred to an ear nose throat consultant who aspirated purulent fluid from the lesion. Fluid culture was positive for *S. pneumoniae* that was susceptible to penicillin, ceftriaxone, levofloxacin and vancomycin and resistant only to erythromycin. He received 5 days of clarithromycin, followed by 3 days of doxycycline. Given persistent symptoms, the doxycycline was switched to levofloxacin 750 mg a day, but this resulted in only mild improvement. The patient was a smoker, used alcohol socially, did not use recreational drugs and had a history of unprotected sex with men only. An oral swab performed at his physician's office was

positive for HIV1/2, so he was referred to our service for management of his suppurative parotitis and HIV infection.

INVESTIGATIONS

He was afebrile and vital signs were normal; erythema, swelling and exquisite tenderness of the right parotid was noted. HIV-1 ELISA was positive in blood and a confirmatory multispot assay was also positive. Baseline CD4 count was 649 cells/mm³, HIV viral load was 170 865 copies/mL, and he was found to be chronically infected with hepatitis B. Two sets of blood cultures drawn during initial consultation did not show any growth, but *S. pneumoniae* urinary antigen was positive. Chest X-ray did not show infiltrates. A CT scan of the neck with intravenous contrast showed an abscess in the region of the right parotid tail measuring approximately 2.5×2.4 cm with extension into the subjacent soft tissues anterior to the sternocleidomastoid muscle. There was associated wall thickening and surrounding inflammatory changes within the subcutaneous fat (figure 1A, B). Because of non-response to therapy and concern for the possibility of concomitant malignancy, he was urgently referred to the head and neck service.

DIFFERENTIAL DIAGNOSIS

- Pyogenic abscess of the parotid
- Lemierre's syndrome
- Hodgkin's lymphoma of the parotid gland
- Non-Hodgkin's lymphoma of the parotid gland
- Reactive hyperplasia associated with HIV
- Lymphocytic parotitis
- Parotid tumour

TREATMENT

He was admitted to the inpatient setting, intravenous levofloxacin was continued and he underwent surgical exploration and debridement of a large abscess in the area of the tail of the parotid. Tissue and abscess Gram stain were negative and cultures were negative as well. Histopathology of the adjacent lymph node showed reactive hyperplasia. A drain was placed and subsequently removed.

OUTCOME AND FOLLOW-UP

Tissue swelling decreased significantly over the course of 48 h and the patient completed a 7-day treatment course of levofloxacin 750 mg a day orally with complete resolution of his symptoms. We attempted to recover the pneumococcal isolate from the outside laboratory for serotyping but the specimen had been already discarded. Regarding

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Figure 1 (A) Coronal soft tissue neck CT with intravenous contrast and (B) axial CT of the neck with intravenous contrast. The lesion in the region of the right parotid tail measures approximate 2.5 cm and extends into the subjacent soft tissues anterior to the sternocleidomastoid muscle.

his HIV disease, an HIV genotype did not show any resistance-associated mutations, so he was started on combination antiretroviral therapy with elvitegravir/cobicistat/emtricitabine/tenofovir at a follow-up visit. He is currently well, and visits the clinic for management of HIV and hepatitis B every 4–6 months. He has achieved undetectable HIV RNA and most recent CD4 count was 1130 cells/mm³.

DISCUSSION

A combination of factors may predispose to the development of acute parotitis, including underlying immunosuppression, surgical procedures, dehydration, neoplasms, parotid ductal obstruction and certain drugs.¹ Although *S. aureus* has historically been the most frequently isolated pathogen, initial antimicrobial therapy should also cover other pathogens such as streptococci, Gram-negative rods and anaerobes.¹ Viruses such as mumps, Epstein-Barr, cytomegalovirus, influenza and HIV may all cause parotitis or parotid swelling.

Non-Hodgkin's lymphoma and lymphangitis are among other non-suppurative causes of parotid enlargement.⁸

Parotitis caused by *S. pneumoniae* has been infrequently described in HIV-infected patients. Stellbrink *et al*³ described a 33-year-old male patient who presented with bilateral parotid and cervical node abscesses, failed clarithromycin and needed surgical drainage of the abscesses and oral penicillin. Hanekom reported on a 2-year-old child who presented with fever and left angle jaw tenderness and was found to have a 5×5 cm left parotid abscess. Cultures grew *S. pneumoniae* and the parotitis resolved with a 2-week course of cefprozil.⁸ Finally, Blanche *et al* described a 40-year-old man with HIV disease, admitted with pneumococcal pneumonia and bacteraemia who was also found to have a left parotid abscess that grew *S. pneumoniae*. The abscess resolved after aspiration and treatment with high-dose amoxicillin therapy.⁷

The burden of invasive pneumococcal disease in the setting of HIV infection has been 50–100-fold greater when compared with the general US population in the pre-HAART era.^{6,9} Even after the introduction of combination antiretroviral therapy, the incidence of pneumococcal disease remains 35 times higher among people infected with HIV when compared with age-matched controls.¹⁰ Defective humoral immunity and impaired interleukin-8 release from alveolar macrophages with concomitant decrease in neutrophil recruitment may predispose to pneumococcal infection in HIV-infected patients.^{4,11–13}

Cigarette smoking is another important risk factor for invasive pneumococcal disease for both HIV-infected and immunocompetent adults.¹⁴ Our patient was not only found to be HIV-infected but was also a smoker, further increasing his risk for pneumococcal disease. Pneumococci that cause invasive disease in the HIV-infected population tend to have increased antimicrobial resistance.¹⁵ Antimicrobial therapy depends on the site of infection and severity of disease. Amoxicillin, oral third generation cephalosporins and newer fluoroquinolones such as levofloxacin or moxifloxacin are all appropriate choices for outpatient therapy. Parenteral therapy with ceftriaxone is traditionally reserved for those cases requiring admission to the inpatient setting, and addition of vancomycin may be required in cases of meningitis.¹⁶ There is a preponderance of paediatric pneumococcal serotypes among HIV-infected adults, which has led to the recommendation for the use of the 13-valent pneumococcal conjugate vaccine.¹⁷

ASP is rare among HIV-infected individuals. In this population, initial antimicrobial therapy should target *S. pneumoniae* in addition to the other commonly described pathogens. Moreover, HIV infection should be suspected in patients presenting with invasive pneumococcal disease.

Learning points

- ▶ Antimicrobial therapy for parotitis should cover the *Staphylococcus aureus*, streptococci, Gram-negative rods and anaerobes.
- ▶ Appropriate antimicrobial therapy may not be enough for treatment unless the source of infection is controlled.
- ▶ *Streptococcus pneumoniae* is an important cause of invasive and pyogenic disease.
- ▶ HIV infection should be investigated in any cases where *S. pneumoniae* is isolated.
- ▶ Vaccination against *Pneumococcus* with 13-valent conjugate vaccine and subsequently with the 23-valent polysaccharide vaccine should be performed to prevent invasive disease.

Competing interests None.

Patient consent Obtained.

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