Case Report

Mycobacterium avium complex suppurative parotitis in a patient with human immunodeficiency virus infection presenting with immune reconstitution inflammatory syndrome

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Restoration of the immune system following initiation of antiretroviral therapy can result in an adverse phenomenon known as immune reconstitution inflammatory syndrome (IRIS). Herein, we report a case of *Mycobacterium avium* complex (MAC) suppurative parotitis associated with IRIS in a patient with advanced human immunodeficiency virus disease. To the best of our knowledge, this is the first reported case of MAC parotitis in the setting of IRIS and clinicians should be aware of this condition.

Introduction

Immune reconstitution inflammatory syndrome (IRIS) in patients infected by the human immunodeficiency virus (HIV) is characterized by paradoxical clinical worsening of a known condition or the appearance of a new condition following initiation of antiretroviral therapy (ART) (Murdoch *et al.*, 2007). *Mycobacterium avium* complex (MAC) organisms cause an opportunistic infection commonly presenting with bacteraemia and/or bone marrow suppression in patients with advanced HIV disease (Nightingale *et al.*, 1992). However, MAC bacteraemia is unlikely to occur in the setting of IRIS (Lawn *et al.*, 2005a). MAC-associated IRIS has been linked with unusual clinical presentations involving various organs but, to the best of our knowledge, has not been linked previously to acute suppurative parotitis in HIV-infected individuals.

Case report

A 32-year-old white man presented with a 2-week history of dry cough, shortness of breath and a self-limiting episode of watery diarrhoea, as well as weight loss over the preceding 3 months. His past medical history was unremarkable apart from a fully resolved previous episode

of Ramsay Hunt syndrome involving the left side of his face. Laboratory-confirmed *Pneumocystis jirovecii* pneumonia (PCP), iron deficiency anaemia and HIV-1 infection were diagnosed and he was subsequently referred to our clinical service. Baseline HIV studies revealed a wild-type virus and a viral load of 587 228 copies ml⁻¹ (log value 5.77), a nadir CD4 lymphocyte count of 39 cells µl⁻¹ (12 %) and a normal chest radiograph. He was started on PCP treatment with co-trimoxazole and steroids but was switched to clindamycin and primaquine 2 weeks later after he developed sulphonamide-induced skin rash. His antiretroviral regimen, which consisted of ritonavir-boosted darunavir, lamivudine and tenofovir, was commenced immediately after completing a 3-week course of PCP treatment. He received dapsone for PCP prophylaxis.

Six weeks following initiation of ART, he presented with acute facial swelling over the angle of his right jaw. The size of the swelling did not change in relation to mastication and there was no evidence of xerostomia. He denied any constitutional symptoms such as fever or night sweats. However, the swelling progressively increased in size over the following 5 weeks to the extent that he was finding it difficult to open his mouth. On examination, he was afebrile and was found to have a fluctuant swelling with overlying erythema on his right mandible. Oropharyngeal examination was normal and there was no evidence of associated facial nerve palsy or peripheral lymphadenopathy.

Abbreviations: ART, antiretroviral therapy; IRIS, immune reconstitution inflammatory syndrome; MAC, *Mycobacterium avium* complex; PCP, *Pneumocystis jirovecii* pneumonia.

On rechecking his HIV surrogate markers, his CD4 count had increased to 354 cells μl^{-1} and his HIV load had fallen markedly to 755 copies ml^{-1} (log value 2.53). Mumps serology was consistent with previous exposure. A repeat chest radiograph was normal. An urgent computerized tomography scan of face and neck revealed heterogeneous enlargement of the right parotid gland together with a large hypodense lesion in the caudal aspect of the gland suggestive of necrosis and abscess formation (Fig. 1). There was no radiological evidence of salivary duct stones.

Fluorescence microscopy with auramine-phenol staining of pus obtained following incision and drainage of the collection in the right parotid gland showed numerous acid-alcohol-fast bacilli. PCR for *Mycobacterium tuberculosis*

complex on the pus sample was negative (in-house qualitative PCR assay; Northern Regional Centre for Mycobacteriology, Newcastle upon Tyne, UK). Further identification of the mycobacterial species grown on culture (BD MGIT 960 system; BD Biosciences) confirmed macrolide-sensitive MAC.

The patient was started on MAC treatment with azithromycin, rifabutin, ethambutol and ciprofloxacin with a view to maintaining this regime for at least 12 months. Adjunctive treatment in the form of a short course of oral steroids was co-administered. ART remained unchanged. Our patient made an excellent clinical recovery and the swelling over his right parotid gland nearly fully resolved by week 8 of MAC therapy.

Discussion

The exact underlying mechanism for IRIS is not fully understood (Carcelain *et al.*, 2001). Reported cases of MAC-associated IRIS include peripheral lymphadenitis and intra-thoracic/abdominal disease but focal MAC infections involving joints, bone, prostate, skin and soft tissue together with a few episodes of spontaneously resolving MAC bacteraemia have also been linked to IRIS (Lawn *et al.*, 2005a; Phillips *et al.*, 2005; Riddell *et al.*, 2007).

Acute bilateral *Mycobacterium scrofulaceum* parotitis was previously reported in association with IRIS (Lawn *et al.*, 2005b). In a post-mortem study, mycobacterial species were isolated from the parotid glands of 10 patients with advanced HIV disease (Vargas *et al.*, 2003). Further assessment of these species, using PCR and ligase chain reactions, identified *M. tuberculosis* complex in nine patients and both *M. tuberculosis* complex and MAC in one patient (Rangel *et al.*, 2005). However, these patients did not have any symptoms related to the parotid gland prior to their death and therefore these findings cannot be taken as evidence of active infection. MAC parotitis has been previously described in a non-HIV immunocompromised adult patient as well as in immunocompetent children (Gittinger *et al.*, 2008; Saggese *et al.*, 2003). Major differential diagnoses of parotid disease in HIV include infections, lymphoma, benign lymphoepithelial cysts, diffuse infiltrative lymphocytosis and Sjögren's syndrome (Seddon *et al.*, 1996; Kazi *et al.*, 1996).

MAC parotitis associated with IRIS has not previously been documented to our knowledge. In our patient, IRIS ensued 6 weeks after initiating ART and was characterized by a nearly 10-fold increase in CD4 count, marked decline in HIV viral load of >3 logs and the onset of progressive unilateral parotid gland swelling. Suppurative MAC parotitis was confirmed and an excellent clinical recovery was made following incision and drainage as well as adding macrolide-based MAC chemotherapy to the pre-existing ART regimen. Of note, our patient did not have mycobacterial blood cultures taken at the referring centre

Fig. 1. Post-contrast computerized tomography head images. (a) Enhancing mass in the right parotid gland (see arrow) and cystic changes in the superficial aspect of the temporalis muscle compartment. (b) Slices are just inferior to the tip of the right parotid. Note cystic changes with a faint rim of enhancement within the masseter muscle (see arrow).

nor did he receive MAC prophylaxis afterwards. These measures were not subsequently considered because he was promptly started on ART after making excellent recovery from PCP. A recent case series of 20 patients with MAC/IRIS found that 35 % of HIV patients presenting with MAC/IRIS were already on MAC prophylaxis and that only 10 % of these patients had MAC bacteraemia (Riddell *et al.*, 2007).

MAC should be considered in the differential diagnoses of parotid gland swellings in HIV patients presenting with immune reconstitution disease.

References

- Carcelain, G., Debre, P. & Autran, B. (2001). Reconstitution of CD4⁺ T lymphocytes in HIV-infected individuals following antiretroviral therapy. *Curr Opin Immunol* **13**, 483–488.
- Gittinger, F. S., Raible, A. & Kempf, V. A. J. (2008). Non-tuberculous mycobacterial infection of the parotid gland in an immunosuppressed adult. *J Med Microbiol* **57**, 536–539.
- Kazi, S., Cohen, P., Williams, F., Schempp, R. & Reveille, J. (1996). The diffuse infiltrative lymphocytosis syndrome: clinical and immunogenetic features in 35 patients. *AIDS* **10**, 385–391.
- Lawn, S. D., Bekker, L.-G. & Miller, R. F. (2005a). Immune reconstitution disease associated with mycobacterial infections in HIV-infected individuals receiving antiretrovirals. *Lancet Infect Dis* **5**, 361–373.
- Lawn, S. D., Checkley, A. & Wansbrough-Jones, M. H. (2005b). Acute bilateral parotitis caused by *Mycobacterium scrofulaceum*: immune reconstitution disease in a patient with AIDS. *Sex Transm Infect* **81**, 517–518.
- Murdoch, D. M., Venter, W. D. F., Van Rie, A. & Feldman, C. (2007). Immune reconstitution inflammatory syndrome (IRIS): review of common infectious manifestations and treatment options. *AIDS Res Ther* **4**, 9.
- Nightingale, S. D., Byrd, L. T., Southern, P. M., Jockusch, J. D., Cal, S. X. & Wynne, B. A. (1992). Incidence of *Mycobacterium avium-intracellulare* complex bacteremia in human immunodeficiency virus-positive patients. *J Infect Dis* **165**, 1082–1085.
- Phillips, P., Bonner, S., Gataric, N., Bai, T., Wilcox, P., Hogg, R., O'Shaughnessy, M. & Montaner, J. (2005). Nontuberculous mycobacterial immune reconstitution syndrome in HIV-infected patients: spectrum of disease and long-term follow-up. *Clin Infect Dis* **41**, 1483–1497.
- Rangel, A. L. C. A., Coletta, R. D., Almeida, O. P., Graner, E., Lucena, A., Saldiva, P. H. N. & Vargas, P. A. (2005). Parotid mycobacteriosis is frequently caused by *Mycobacterium tuberculosis* in advanced AIDS. *J Oral Pathol Med* **34**, 407–412.
- Riddell, J., Kaul, D., Karakousis, P., Gallant, J., Mitty, J. & Kazanjian, P. (2007). *Mycobacterium avium* complex immune reconstitution inflammatory syndrome: long term outcomes. *J Transl Med* **5**, 50.
- Saggese, D., Compadretti, C. & Burnelli, R. (2003). Non-tuberculous mycobacterial adenitis in children: diagnostic and therapeutic management. *Am J Otolaryngol* **24**, 79–84.
- Seddon, B. M., Padley, S. P. & Gazzard, B. G. (1996). Differential diagnosis of parotid masses in HIV positive men: report of five cases and review. *Int J STD AIDS* **7**, 224–227.
- Vargas, P. A., Mauad, T., Böhm, G. M., Saldiva, P. H. N. & Almeida, O. P. (2003). Parotid gland involvement in advanced AIDS. *Oral Dis* **9**, 55–61.