Paradoxical Reaction in Tuberculosis Presenting as Pediatric Neck Mass

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INTRODUCTION

Paradoxical reaction (PR) in tuberculosis (TB) is defined by a clinical or radiological worsening of pre-existing tuberculosis lesions or the development of new ones, in patients receiving anti-tuberculous treatment who initially improved on therapy. The mechanisms of this self-limited response are not entirely understood, but are believed to be due to an abnormal immune response or reconstitution of the immune system. The incidence of PR in TB may be as high as 23% of non-HIV patients. PR in TB most commonly manifests as worsening of the original lesion, especially CNS disease, followed by new pleural, skin and lymph node disease.

A separate, but possibly related disorder, immune reconstitution inflammatory syndrome (IRIS) is an immune-mediated pathologic reaction that occurs after reversal of immunosuppression, commonly from HIV. This can occur in up to 30% of HIV patients undergoing antiretroviral therapy. A similar process can also occur in patients that have had a reversal of pharmacologic TNF blockade, transplant medication, and natalizumab treatment. Interestingly, the co-occurrence of microbial infections with HIV, particularly TB, near the start of antiretroviral therapy increases the risk of IRIS. There is also a correlation between lower CD4 counts prior to therapy and increased risk of IRIS. The manifestations of IRIS may include fever, respiratory distress, cavitating lung lesions, meningitis or severe necrotic lymphadenopathy—much like PR in TB with worsening of previous co-infecting microbial infections or development of new ones. PR and IRIS are important conditions to consider in the differential diagnosis of pediatric neck masses.

RESULTS

Patient 1 is a 9-year-old African-born female who was diagnosed with HIV in 1999 when presenting with disseminated TB. She presented with chills, weight loss and abdominal pain two weeks prior to admission and a two month history of cough. INH-resistant M TB was cultured from her sputum and CXR revealed a cavity lesion on the right and disseminated bilateral lesions. CT abdomen showed enlarge retroperitoneal nodes. CD4 count on presentation was 34 and HIV viral load was 500,000. The TB was treated with INH, rifampin, amikacin, pyrazinamide and ethambutol. Anti-retroviral therapy was started in January 2000. Her CT neck revealed necrotic LNs bil, particularly in the left posterior neck two months after initiation. A left MRND was performed two months later for massive cervical LAD that drained cheesy material. Pathology returned as benign LNs with necrosis and negative cultures including acid-fast and fungal. 11 mo s/p treatment, a right 6.5cm neck mass was tender and fluctuant. Needle aspiration showed AFB on the smear, but was negative on fixed tissue. An excisional bx of the right cervical LAD two months later showed benign LNs with necrotizing granulomas and cultures were once again negative. Just over 1 year after treatment her CD4 count was > 400 and HIV viral load was < 50. She once again developed enlarging left-sided cervical LAD that was excised and found to be necrotic with negative cultures.

Patient 2 is a 18 year old African born female who was diagnosed with HIV in 1999 when presenting with disseminated TB. She presented with chills, weight loss and abdominal pain two weeks prior to admission and a two month history of cough. INH-resistant M TB was cultured from her sputum and CXR revealed a cavity lesion on the right and disseminated bilateral lesions. CT abdomen showed enlarge retroperitoneal nodes. CD4 count on presentation was 34 and HIV viral load was 500,000. The TB was treated with INH, rifampin, amikacin, pyrazinamide and ethambutol. Anti-retroviral therapy was started in January 2000. Her CT neck revealed necrotic LNs bil, particularly in the left posterior neck two months after initiation. A left MRND was performed two months later for massive cervical LAD that drained cheesy material. Pathology returned as benign LNs with necrosis and negative cultures including acid-fast and fungal. 11 mo s/p treatment, a right 6.5cm neck mass was tender and fluctuant. Needle aspiration showed AFB on the smear, but was negative on fixed tissue. An excisional bx of the right cervical LAD two months later showed benign LNs with necrotizing granulomas and cultures were once again negative. Just over 1 year after treatment her CD4 count was > 400 and HIV viral load was < 50. She once again developed enlarging left-sided cervical LAD that was excised and found to be necrotic with negative cultures.

CONCLUSIONS

In this report, two patients are presented who developed severe bilateral cervical lymphadenopathy while undergoing treatment for tuberculosis and in one, HIV. Biopsies and cultures yielded inflammation but were negative for organisms. Paradoxical reaction in tuberculosis and IRIS should be considered in the differential diagnosis of pediatric neck masses.

REFERENCES