

## New disease

# Initial description of immune reconstitution inflammatory syndrome involving the thyroid gland in an immunocompromised patient

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## Summary

Abscess formation in the thyroid gland is particularly a rare phenomenon and presents a medical and surgical dilemma especially in HIV seropositive patients. The authors report a case of a paradoxical tuberculous abscess immune reconstitution inflammatory syndrome involving the thyroid gland in a 37-year-old woman who presented 12 weeks after initiation of antiretroviral therapy at the Infectious Diseases Institute, Kampala, Uganda. The patient is still undergoing treatment.

## BACKGROUND

Thyroid gland abscess formation is a rare occurrence owing to its inherent resistance to infections.<sup>1</sup> It also presents both medical and surgical dilemmas. The case we present in this report is an immune reconstitution inflammatory syndrome (IRIS) presenting in form of a tuberculous abscess of the thyroid gland. To the best of our knowledge; this is the first reported case of a paradoxical tuberculous thyroid abscess IRIS in an immunocompromised patient.

## CASE PRESENTATION

We initiated a 37-year-old woman on highly active antiretroviral therapy (HAART) – zidovudine, lamivudine and nevirapine in October 2010 at the Infectious Diseases Institute, Kampala, Uganda. Her nadir CD4 count at HAART initiation was 11 cells/ml (2%). She had however, completed an 8 month tuberculosis (TB) chemotherapy program for pleural TB, 1 month prior to HAART initiation. Thirteen weeks later, the patient presented with an 8-week history of a neck mass, associated drenching night sweats, evening fevers, anorexia, general malaise, muscle aches, intolerance to heat, dysphagia and pressure symptoms including hoarseness of the voice.

Physical examination revealed a sick looking woman who was mildly wasted. Her vital signs were as follows: blood pressure 110/70 mm Hg, pulse rate 110 beats/min, respiratory rate 12 breaths/min and body temperature 38.7°C.

Examination of the neck revealed a uniformly enlarged, non-tender, non-pulsatile, slightly warm and fluctuant mass measuring about 6 cm × 7 cm. Precordial and ophthalmic examinations were unremarkable. Laboratory studies revealed a white blood cell (WBC) count of 5100/mm<sup>3</sup>, an elevated erythrocyte sedimentation rate (ESR) of 53 mm/h and a raised mean corpuscular volume (MCV) of 114fl. The rest of the routine laboratory tests were normal. Thyroid-stimulating hormone levels were 0.28  $\mu$ IU/l

(0.27 – 4.2) while free tri-iodothyronine was 3.2 nmol/l (1.3 – 3.1) and free thyroxine was 180 nmol/l (66–181). The chest x-ray was unremarkable. Ultrasonography revealed a complex left thyroid lobe cystic mass measuring 55.3 mm × 41.7 mm with retrosternal extension. Fine needle aspiration and cytology (FNAC) of the lesion disclosed thick yellow pus. Histopathology revealed 5–10/HPF Gram positive cocci and 10–15/HPF acid-fast bacilli on Gram and Ziehl–Nielsen stains respectively. Initial cultures were negative for both bacterial and mycobacterial growth on conventional solid culture medium and Lowenstein-Jensen medium. The repeat CD4 count in January 2011 was 99 cells/ml (9%). The viral loads could not be done due to the high costs involved.

We subsequently admitted her and management included incision and drainage of the abscess, placement of a drain, non-steroidal anti-inflammatory drugs (NSAIDs) and antibiotics- cloxacillin, ampicillin and metronidazole. In the interim, we started her on anti-TB therapy as cultures take up to 8 weeks. Continual adherence to cotrimoxazole, anti-TB drugs and HAART is continually being emphasized.

## INVESTIGATIONS

CD4 counts, complete blood count, ESR, T3, T4, TSH, chest x-ray, thyroid ultrasound scan, renal function tests, liver function tests, fine needle aspiration and cytology, histopathology, cultures and sensitivity.

## DIFFERENTIAL DIAGNOSIS

Hyperthyroidism (Grave's disease) IRIS.

## TREATMENT

Incision and drainage of the abscess, placement of a drain, NSAIDs and antibiotics – cloxacillin, ampicillin, metronidazole, anti-TB therapy and HAART.

## OUTCOME AND FOLLOW-UP

The patient is still undergoing TB treatment and care.

## DISCUSSION

Tuberculosis of the thyroid gland is uncommon. This is because of its inherent characteristics particularly which include extensive lymphatic and blood drainage, anatomic isolation, elevated iodine content and total encapsulation. Anastomosing superior and inferior arteries also hinder bacterial invasion of the thyroid.<sup>2-5</sup> Immunosuppression secondary to HIV has become associated with atypical clinical manifestations. The HAART era has further complicated clinical manifestations with the increasing emergence of IRIS events and in the case of TB, the emergence of paradoxical and unmasking TB IRIS.

Paradoxical TB-IRIS occurs when TB is previously treated but returns or worsens after HAART initiation. On the other hand, unmasking TB IRIS occurs when TB is newly diagnosed after HAART initiation, having not been present at the time of HAART commencement.<sup>6-8</sup> We commenced our patient on HAART with a nadir CD4 count of 11 cells/ml (2%), 1 month after completing an 8-month chemotherapy course for pleural TB. Although she developed neck swelling 5 weeks after HAART commencement, she reported to the institute 8 weeks later. A ninefold increase in absolute CD4 counts and a 4.5-fold increase in CD4 percentage in our patient clearly illustrate immune system recovery. In the absence of viral loads, another observation that illustrates immune system recovery is the raise in MCV from 90fl at HAART initiation in October 2010 to 114fl 5 weeks after HAART initiation. The rise in MCV attributed to zidovudine also suggested good adherence to HAART. We believe what we are discussing is a paradoxical TB IRIS event on the basis of the history of TB 1 month prior to HAART initiation, 4.5-fold increase in CD4 percentage after 5 weeks of HAART and the development of a significant clinical event five weeks after HAART commencement.

Albeit hyperthyroidism was a differential diagnosis, we excluded it on the basis of the thyroid profile and FNAC findings. On the contrary, our patient presented with the classic symptoms of thyroid abscess: anterior neck swelling, hoarseness of the voice and dysphasia.<sup>5</sup> Upon review

of literature, we have not come across a similar case in immunocompetent patients.

We admitted our patient for surgical drainage, intravenous antibiotic therapy, anti-inflammatory therapy, steroid therapy and anti-TB therapy.

## Learning points

- ▶ We learnt that tuberculosis can manifest as an IRIS event even in areas where such presentations are not expected to occur as in the thyroid as we have seen in this patient.
- ▶ Appropriate referral systems need to be put in place at HIV treatment centres in order to adequately manage medical emergencies due to IRIS events.
- ▶ Clinicians therefore need to be aware of such presentations as a form of an IRIS event when patients are initiated on HAART.

**Competing interests** None.

**Patient consent** Obtained.

## REFERENCES

1. **Cannizzaro MA**, Veroux M, La Ferrera MG, *et al.* Klebsiella pneumoniae pulmonary infection with thyroid abscess: report of a case. *Surg Today* 2008;**38**:1036–9.
2. **Martin-Dávila P**, Quereda C, Rodríguez H, *et al.* Thyroid abscess due to Rhodococcus equi in a patient infected with the human immunodeficiency virus. *Eur J Clin Microbiol Infect Dis* 1998;**17**:55–7.
3. **Kang M**, Ojili V, Khandelwal N, *et al.* Tuberculous abscess of the thyroid gland: a report of two cases. *J Clin Ultrasound* 2006;**34**:254–7.
4. **Jacobs A**, Gros DA, Gradon JD. Thyroid abscess due to Acinetobacter calcoaceticus: case report and review of the causes of and current management strategies for thyroid abscesses. *South Med J* 2003;**96**:300–7.
5. **Kale SU**, Kumar A, David VC. Thyroid abscess—an acute emergency. *Eur Arch Otorhinolaryngol* 2004;**261**:456–8.
6. **Beishuizen SJ**, Geerlings SE. Immune reconstitution inflammatory syndrome: immunopathogenesis, risk factors, diagnosis, treatment and prevention. *Neth J Med* 2009;**67**:327–31.
7. **Lawn SD**, Wood R. Immune reconstitution inflammatory syndrome. *Lancet Infect Dis* 2010;**10**:833–4.
8. **Martin-Blondel G**, Alvarez M, Delobel P, *et al.* Toxoplasmic encephalitis IRIS in HIV-infected patients: a case series and review of the literature. *J Neural Neurosurg Psychiatr* 2010;(In Press).

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