

Tuberculosis of the thyroid gland: A case report

Mpikashe P, MBChB

Sathekge MM, MBChB, M Med (Nucl. Med)

Mokgoro NP, MBChB

Department of Nuclear Medicine, Medunsa Pretoria

Ogunbanjo GA MBBS, MFGP (SA), M Fam Med, FACRRM, FACTM, FAFP (SA)

Department of Family Medicine & Primary Health Care, Medunsa Pretoria

(SA Fam Pract 2004;46(7): 19-20)

Introduction:

Tuberculosis (TB) of the thyroid gland is a rare disease. In the first reported case study, the patients were clinically and biochemically euthyroid.¹ It may present as a thyroid abscess in pulmonary TB patients.² Fine Needle Aspiration (FNA) is a useful diagnostic procedure although with a possible low yield of acid fast bacilli (AFB). This case study highlights the role of nuclear medicine imaging and histology as important adjuncts in the diagnosis of this rare condition.

Patient presentation:

A 52-year-old female patient was referred from a local clinic with a two-month history of a painless, slow-growing right anterior neck swelling. The only significant information from the history was a positive family history of TB (her younger brother was on TB treatment). The general physical examination was essentially normal. The neck swelling was smooth, non-tender, firm, moved with swallowing and 4cm by 5 cm in diameter. There was no bruit over the swelling or any sign of thyrotoxicosis. The blood urea and electrolytes, liver function tests, full blood count and electrophoresis results were all within normal limits. The ESR was not done and HIV test was negative. The chest radiograph was normal. There was a low TSH

level of 0.07mu/L (0.46 - 4.68mu/L), normal levels of T4 level - 11.33pmol/L (7.5 - 21.1 pmol/l) and total T3 - 1.43pmol/L (1.34 - 2.73 pmol/L), all suggestive of subclinical hyperthyroidism. FNA of the swelling revealed lymphocytes at various stages of development and no malignant cells.

Special investigations:

Technetium 99m pertechnetate thyroid scintiscan revealed uniform flow distribution to both thyroid lobes with hardly any uptake noted in the region of the thyroid gland on the 20-minute static images (i.e. flow/uptake mismatch) respectively (figs 1,2). The Tc-99m methoxyisobutyl isonitrile (MIBI) showed uniform tracer uptake with no focal intense accumulation on both lobes (fig 3). The pattern of markedly reduced pertechnetate uptake and

Figure 1: Tc-99m thyroid scan demonstrates uniform flow distribution to both lobes

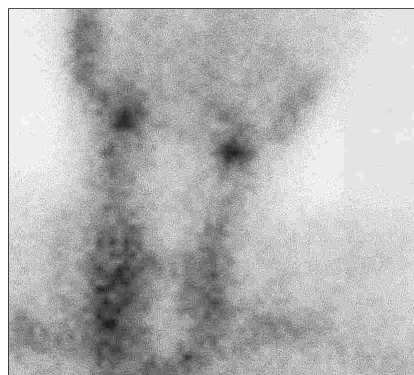


Figure 2: Tc-99m thyroid scan with hardly any uptake in the region of the thyroid gland on the 20 min anterior static.

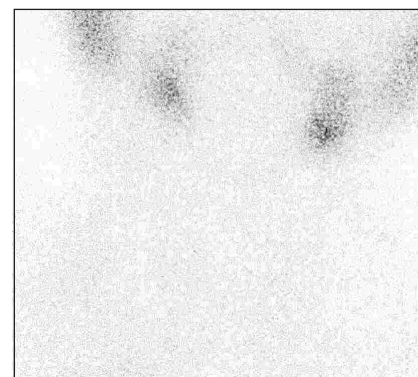
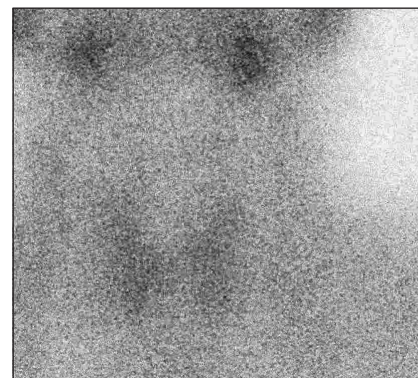


Figure 3: Tc-99m methoxyisobutylisonitrile (MIBI) showing uniform tracer uptake with no focal intense accumulation on both lobes.



uniform accumulation on MIBI was suspicious of thyroiditis. The pertechnetate scintiscan findings did not correlate with the clinical impression of single thyroid nodule or swelling. Despite the non-specific findings from FNA and nuclear medicine images, the surgeons decided to perform a right sided lobectomy

and excision of an ipsi-lateral cervical lymph node on suspicion of a malignant thyroid nodule. The histology report of the thyroid gland specimen revealed multifocal chronic granulomatous inflammation with Langerhans cells (figs 4-6).

Figures 4-6: The sections show thyroid gland with chronic granulomatous inflammation, Langerhans giant cells and necrosis. Few foreign body giant cells are present with some of them engulfing colloid. Follicles of varying size are surrounded by the granulomas. Areas of fibrosis are seen in a patchy distribution.

Figure 4:

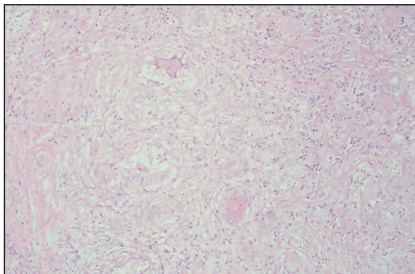


Figure 5:

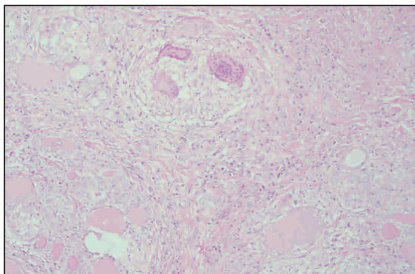
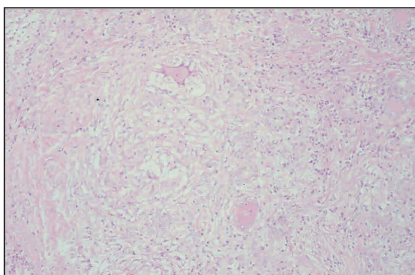


Figure 6:



The acid fast bacilli stains were negative and no malignant cells found. The cervical lymph node also showed extensive necrotizing granulomatous inflammation with few Langerhans giant cells suggestive of tuberculosis. The patient developed wound sepsis over the incision

site postoperatively, which healed with betadine dressing. The diagnosis of TB of the thyroid gland was made and she responded to anti-tuberculous therapy.

Discussion:

The first cases of TB of the thyroid gland were reported as "disseminated tuberculosis" and "tuberculous thyroiditis with no evidence of pulmonary TB in 1862 and 1893 respectively.¹ The ability of the thyroid gland to resist infections is well known and attributed to a number of factors namely a prosperous lymphatic and vascular supply, well developed capsule, and high iodine content of the gland.² TB of the thyroid gland is rare and is spread by lymphogenous, hematogenous routes or directly from adjacent organs. Symptoms are non-specific and variable resulting in the differential diagnoses of toxic goiter / hyperthyroidism, acute thyroiditis, Riedel thyroiditis and benign nodules.^{3,4} The differentiation from thyroid cancer is essential to avoid unnecessary surgery.⁵ Fine needle aspiration (FNA) is a useful diagnostic procedure to detect TB of the thyroid. However, acid-fast bacilli staining and culture from aspirated thyroid tissue are sometimes insufficient to detect *mycobacteria tuberculosis*, as was the case in our patient. The histological finding of epithelial cell granulomas with peripheral lymphatic cuffing, Langerhans giant cells and central caseation necrosis which support the diagnosis of TB of the thyroid.⁵

FNA, ultrasound and scintigraphy are important tools for the diagnosis of thyroid disease. However, the strategy for examining thyroid nodules in countries with sufficient iodine intake is different from those with insufficient iodine intake. In the latter, and in countries with a high prevalence of nodular goiter, tech-

netium-99m scintigraphy of the thyroid is a crucial nuclear medicine imaging procedure. It allows differentiation between *hot* and *cold* nodules and, in the case of the Graves' disease, determination of the thyroid activity and detection of cold nodules.⁶ Our center has a high prevalence of nodular goiter. The scintigraphic findings of no tracer accumulation on Tc-99m pertechnetate and uniform uptake of both lobes on Tc-99m MIBI should result in a different surgical approach. In addition, performing Tc-99m MIBI helps to detect thyroid metastases and prioritize patients who will benefit from excision of the thyroid nodule only. Although TB of the thyroid is rare, the fact that South Africa has a high prevalence of TB should alert the family practitioner to its existence and the available nuclear medicine imaging modalities that can assist diagnosis. Finally, it should be distinguished from other thyroid diseases e.g. various types of thyroiditis, Graves' disease and nodular goiter.

References

1. Barnes P, Weatherstone R. Tuberculosis of the thyroid. Two case reports. *Br J Dis Chest* 1979; 73: 187-91.
2. Schweitzer VG, Olson NR. Thyroid abscess. *Otolaryngol Head Neck Surg* 1981; Mar-Apr, 89(2): 226-229.
3. Pazaitou K, Chrisoulidou A, Ginikopoulou E, Angel J, Destouni C, Vain I. Primary tuberculosis of the thyroid gland: report of three cases. *Thyroid* 2002; 12(12): 1137-40.
4. Malki HO, Absi M, Mohsine R, et al. Tuberculosis of the thyroid. Diagnosis and treatment. *Ann Chir* 2002; 127(5): 385-7.
5. Talwar VK, Gupta H, Kumar A. Isolated tuberculosis thyroiditis. *J IACM* 2003; 4(3): 238-9.
6. Becker W, Schicha H. The thyroid. *Eur J Nucl Med* 2002; 29 (suppl. 2): S401-403.