CASE REPORT

Acute suppurative thyroiditis secondary to urinary tract infection by *E. coli*: a rare clinical scenario

Supriya Sen,¹ Pooja Ramakant,¹ Mazhuvanchary Jacob Paul,¹ Anne Jennifer²

¹Department of Endocrine Surgery, Christian Medical College, Vellore, Tamil Nadu, India

²Department of Pathology, Christian Medical College, Vellore, Tamil Nadu, India

Correspondence to

Dr Supriya Sen,
supriyaspeedie@gmail.com

Accepted 28 December 2015

SUMMARY

A 60-year-old woman with diabetes and symptomatic urinary tract infection presented to us with a painful neck swelling for 2 weeks. We discuss diagnostic and management issues in acute suppurative thyroiditis caused by *Escherichia coli*.

BACKGROUND

The thyroid gland has unique resistance to infection making acute suppuration extremely rare. This can be attributed to anatomical and physiological characteristics of the gland. Thyroid abscess is usually caused by *Staphylococcus aureus* or *Klebsiella pneumoniae*. This patient presented with a painful swelling in front of the neck for 2 weeks; it was rapidly worsening. She was diagnosed as having a thyroid abscess and hence was planned for emergency surgical drainage. This case report reiterates the fact that prompt diagnosis and surgical management is the best modality of cure in this group of patients.

CASE PRESENTATION

A 60-year-old woman presented to us with painful swelling in front of her neck of 2-week duration. It was associated with fever, cough, dysphagia and mild hoarseness of voice. Two weeks prior to this, she had had a history of high-grade fever with chills and rigours along with dysuria. She had been

treated for urinary tract infection but continued to be symptomatic.

She was a known diabetic for 3 years on irregular oral hypoglycaemic agents and blood sugars were uncontrolled at presentation.

On examination, she appeared toxic. She was febrile and had tachycardia. There was a large ill-defined swelling in the anterior triangle region of the left lobe of the thyroid, with overlying erythema and oedema. Palpation revealed increased warmth and tenderness with ill-defined borders extending retrosternally, and no regional lymphadenopathy.

INVESTIGATIONS

Blood investigations revealed a total leucocyte count of 9900/mm³ with neutrophils of 79 and erythrocyte sedimentation rate (ESR) of 95 mm. Thyroid function tests were normal (S.TSH: 2.733, S.T4-9.8 and FTC: 1.25. Fasting blood glucose was 294 mg% and post prandial blood glucose was 485 mg% with glycated haemoglobin of 13.1%. Fine needle aspiration cytology (FNAC) showed clusters of neutrophils. CT scan showed a multiloculated cystic mass in the left lobe of the thyroid with retrosternal extension and tracheal compression (figure 1).

TREATMENT

The patient was admitted with a diagnosis of acute thyroiditis and started on cloxacillin therapy. There

Figure 1 Showing chest X-ray, ultrasound and contrast-enhanced CT images.

CrossMark

To cite: Sen S, Ramakant P, Paul MJ, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2015-213231

Figure 2 Showing preoperative and intraoperative images.

was no clinical response in 24 h, therefore intravenous piperacillin tazobactam was administered. Since there was clinical and radiological evidence of abscess with no improvement following use of antibiotics, the patient was surgically explored.

Intraoperatively, the abscess involved the entire left lobe with necrosis of the whole lobe. About 200 mL of frank pus was drained, most of which was contained by the strap muscles, but some had broken through into the subcutaneous plane (figure 2).

Urine culture reported significant growth of *E. coli*, also isolated from thyroid abscess. The patient's histopathology report showed acute suppurative thyroiditis involving the left lobe (figure 3). She was treated with amikacin injection based on sensitivity report.

OUTCOME AND FOLLOW-UP

The patient improved clinically and was discharged on fifth postoperative day. She was followed up at 2 weeks after surgery and was doing well, with adequate wound healing.

DISCUSSION

Thyroid abscess is a rare clinical disorder with an incidence of 0.1–0.7% of all thyroid pathologies.¹ The thyroid gland, per se, is resistant to infections because of its anatomy consisting of the capsule, increased vascularity and also its high iodine content.^{1 2}

In children, thyroid abscess has been documented due to an anatomical defect, namely, a pyriform sinus fistula. It usually presents as acute thyroiditis, which occasionally may lead to an abscess formation. It predominantly involves the left lobe more

than the right.³ Sometimes, it may arise from a branchial cleft fistula or thyroglossal duct.⁴

However, in adults, the causes are different. The main causes are secondary infection from haematogenous and lymphatic spread from distant sites, contamination by unsterile FNAC and direct trauma from a foreign body. Pre-existing thyroid pathology is also associated with formation of thyroid abscess. Our patient had diabetes with poor glycaemic control and urinary tract infection, which is a still rarer scenario as compared with cases in the available literature.

The common causative organisms are Gram positive organisms such as *S. aureus*, Streptococci and Gram negative organisms involving the oropharynx. Occasionally, *Klebsiellae*, *Salmonella typhi* and *Eikenella* have been detected as the causative organisms. In immunocompromised patients, a fungal aetiology may also be considered.^{1 2 5 6} However, in our case, the causative organism was *E. coli*, which is very rare. We assume the cause for this may be a partially treated urinary tract infection caused by the same organism, in a poorly controlled diabetic patient.

In the literature, there have been some case reports of thyroid abscess caused by *E. coli*.

Table 1 shows some of the cases reported.

The common clinical differential diagnoses for a painful or tender thyroid swelling are subacute thyroiditis or haemorrhage within a cyst. However, if there is fever along with clinical symptoms such as dysphagia, dyspnoea and even hoarseness of voice in a poorly controlled diabetic patient, then it may be prudent to consider thyroid abscess as a likely differential diagnosis. Investigations performed should include complete blood counts, ESR, thyroid function tests, blood culture, an ultrasound of the thyroid gland, needle aspirate for cytology and culture. If feasible, a CT scan may be attained before planning surgery, to assess the extent of the abscess. If there is history of a recent

Figure 3 Showing HPE.

Table 1 Similar cases reported in literature

Year	Primary site	Isolated organism	Management
Siciliaand Mezitis, 2006 ⁷	Possible UTI	<i>E. coli</i>	Surgical drainage
Fassih <i>et al</i> , 2012 ⁸	Possible UTI	<i>E. coli</i>	Surgical drainage
Saksouk and Salti, 1970 ⁹	Possible UTI	<i>E. coli</i>	Surgical drainage
Peralta <i>et al</i> , 2006 ¹⁰	Possible UTI	<i>E. coli</i>	Surgical drainage
Macedo <i>et al</i> , 2014 ¹¹	Possible UTI	<i>E. coli</i>	Conservative management

E. coli, *Escherichia coli*.

distant site of infection, as in our patient, it should be investigated and treated appropriately. The treatment is surgical drainage. However, Macedo *et al*¹¹ reported a case of *E. coli* abscess in an obese patient with cardiac failure, managed successfully with intravenous meropenem for 3 weeks.

Our patient underwent left hemithyroidectomy. The extent of surgery must be tailor-made for each patient; this may range from a simple incision and drainage, to hemi-thyroidectomy.

Learning points

- If a patient presents with a painful thyroid swelling, it may be useful to consider thyroid abscess as a possibility.
- An ultrasound will help in defining an abscess collection, and a fine needle aspiration cytology may be useful in sending for cultures and starting antimicrobial therapy.
- Immediate surgery either as a drainage or a lobectomy is the modality of choice.

Contributors SS was involved in the conception, design and drafting the article. PR was involved in the revising the article critically for important intellectual content and choosing the select clinical photographs. MJP was involved in the drafting the article or revising it critically for important intellectual content and final approval of the version to be published. AJ was involved in the revising the article critically for important intellectual content and providing appropriate histology photograph.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Cengizhan Şan Özdemir, Selim Sözen, Oktay Banlı. Acute neck infection due to thyroid abscess. *Eur J Gen Med* 2011;8:144–7.
- 2 Moffa F, Lanfranco G, Volante M, *et al*. Acute suppurative thyroiditis. Report of a case and review of the literature. *Minerva Chir* 1996;51:745–9.
- 3 Boyce G, Satasivam P, Miller F. Multinodular goitre complicated by abscess due to *E. coli*. *ANZ J Surg* 2009;79:948–9.
- 4 Yeluri S, Mehta JP, Karanth S, *et al*. A tender lump in the neck. *Med J Aust* 2006;184:137.
- 5 Nmadu PT. Infective thyroiditis in northern Nigeria: a fifteen-year study. *East Afr Med J* 1989;66:748–51.
- 6 Cawich SO, Hassranah D, Naraynsingh V. Idiopathic thyroid abscess. *Int J Surg Case Rep* 2014;5:484–6.
- 7 Sicilia V, Mezitis S. A case of acute suppurative thyroiditis complicated by thyrotoxicosis. *J Endocrinol Invest* 2006;29:997–1000.
- 8 Fassih M, Moujahid E, Abada R, *et al*. Escherichia coli thyroid abscess: report of a case and literature review. *Pan Afr Med J* 2012;11:42.
- 9 Saksouk F, Salti IS. Acute suppurative thyroiditis caused by Escherichia coli. *Br Med J* 1977;2:23–4.
- 10 Peralta M, Roa C, Pines PJ, *et al*. Acute thyroiditis caused by Escherichia coli. 2006;53.
- 11 Macedo D, Leite V, Vieira M, *et al*. Acute Suppurative Thyroiditis Secondary to Escherichia coli Urinary Tract Infection. Endocrine Society's 96th Annual Meeting and Expo, June 21–24, 2014—Chicago.

Copyright 2016 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow