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Case Report

Thyroid Abscess due to Salmonella: Rare Entity of Unpredictable Severity

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Abstract: ***Introduction:*** Thyroid infections are rare clinical situations. These include acute suppurative thyroiditis (AST), including abscesses, where the most common infectious agents are gram-positive cocci, thyroid abscesses caused by gram-negative aerobes are rare, as is the case with salmonella. ***Case Report*:** We report a case of 50 years old female patient who presented with a painful cervical swelling, evolving since2 weeks, diagnosed as thyroid abscess due to salmonella enterica which revealed a previously undiagnosed diabetes. The abscess was treated by surgical drainage with double systemic antibiotic therapy. ***Discussion and conclusion:*** Thyroid abscesses are rare, and salmonella bacteria are an exceptional cause. This type of infection is favored by situations of immunodepression, such as diabetes, especially if undiagnosed or untreated.

Keywords: Thyroid abscess, salmonella, immunodepression, diabetes, draiange, antibiotics.

INTRODUCTION

Infectious attacks on the thyroid gland are generally rare, given its constitution and defense mechanisms, which give it a high degree of protection against pathogens. However, general states of immunodepression, especially latent ones, such as diabetes and/or pre-existing thyreopathies favor the development of acute suppurative thyroiditis [1].

We present a case of thyroid abscess due to salmonella enterica to describe the clinical, pathological and therapeutic features of this type of disease.

CASE REPORT

Fifty years-old female patient, with no history of thyreopathy or immunosuppression, no family history of thyroid disease, admitted for a right cervical swelling, painful, rapidly increasing in volume, without compressive signs, in a context of feverish sensations and altered general condition.

On admission the patient was conscious, stable with blood pression at 120/60 mmhg, breath rate at 16 Br/mn, pulse rate at 72 bpm, T°: 37,4 c. Cervical palpation revealed a red, warm, painful thyroid-like mass.

Biological assessment revelead high white blood cells at 11250/mm3, microcytic hypochromic anemia with hemoglobin at 11,7 g/dl, C-Reactive Proteine (CRP) at 273,8 mg/l, inaugural hyperglycemia at 5.02 g/l without ketosis, TSH us normal at 0,71 mUI/l.

After correction of hyperglycemia, a neck ultrasound was made, noting a poorly limited anterior cervical mass, measuring 47*65*80.5 mm, heterogeneous, containing cystic areas, echogenic and hypoechogenic areas, capsule poorly individualized in places, oval, cystic isoechoic left lobar nodules measuring 10 mm for the largest, with no visualized adenopathies.

A cervical CT scan revealed a voluminous, fairly well-limited, heterogeneous right lobo-isthmic thyroid lesion with areas of fluid and air bubbles and some calcifications. It was responsible for capsular effraction and infiltration of the opposing muscular

plane. The lesion comes into intimate contact with the jugulo-carotid axis, and adheres medially to the thyroid cartilage without invading. It plunges downwards into the upper mediastinum, making intimate contact with the brachiocephalic arterial trunk and the left primary carotid artery with presence of lower cervical jugular and right anterior mediastinal adenopathies, the largest measuring 12 mm **(Figure 1).** The diagnosis evoked at this stage was a thyroid abscess or infected thyroid neoplasia. Retroviral, hepatitis and syphilitic serologies were negative, Embryonic carcinoma antigen assay was normal.

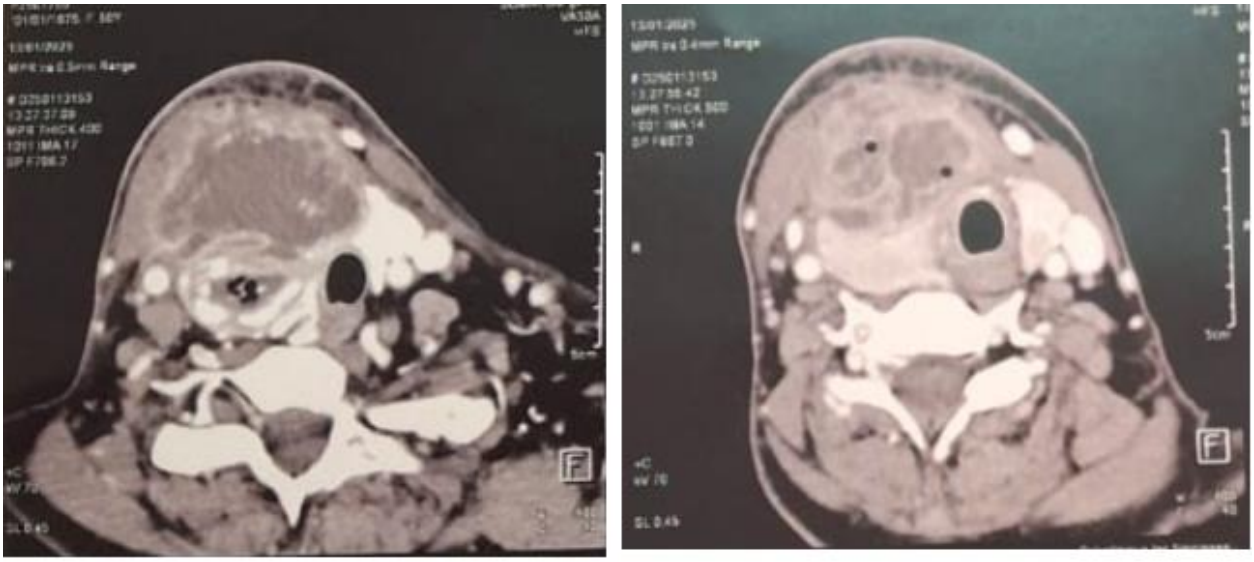

Figure 1 : Cervical CT Scan :heterogene thyroid lesion mesuring 8 cm.

The patient underwent a surgical drainage, which brought back about 60 cc of purulent liquid with bacteriological study identifying gram-negative bacilli of the salmonella enterica type with a negative genexpert for mycobacteruim tuberculosis and without malignant cells on cytological study. The patient was put on a double course of antibiotics based on third generation cephalosporins 4 g/d and metronidazol 1.5 g/d. At the same time, basal bolus insulin therapy was initiated.

The evolution was marked by an improvement in the local condition, with a decrease in CRP and blood sugar levels **(Table 1).**

Table 1: CRP and Glycemia evolution

	Day 1	**Day 3**	**Day 5**
CRP (mg/l)	273,8	128,3	78,8
Glycemia (g/l)	(3,17 to 5,02)	(1,8-2,2)	(1,43-1,9)

DISCUSSION

Thyroid abscesses account for 0.1 to 0.7 % of thyroid surgical pathologies. This suppurative pathology usually occurs in the presence of immunodepression or congenital malformation of the thyroglossal tract [2].

The thyroid gland is generally protected against infectious attacks by: a rich vascularization ensuring an important flow of immune cells, a high concentration of iodine and hydrogen peroxyde hydroge; known for its antimicrobial power, its fibrous capsule and the anti-infectious role of thyroid hormones [3]. Congenital malformation, fistula, cystic or nodular thyroid pathology predispose to AST [4].

In our patient, the existence of thyroid nodules detected on cervical ultrasound and the diagnosis of previously unrecognized diabetes are favourable factors for the development of this type of infection.

Abscesses are found preferentially in the right thyroid lobe; this finding had no pathophysiological explanation, but was rather an epidemiological fact. The most common pathogens are bacteria (Staphylococcus aureus and Streptococcus pyogenes), responsible for around 40% of cases [5], while fungal or parasitic infetcions are exceptionally described.

Up to the present day, around 30 cases of Salmonella thyroid abscesses have been reported in the literature. The 2 most frequently described species are S. Enterica and S. Bongori [6]. From these 2 types emerge other subtypes such as S. thyroiditis which can be generated by S. thyphi and S. non thyphi. In immunocompetent subjects, S. non thyphi mainly causes

acute gastroenteritis, whereas in immunocompromised subjects, it can cause abscesses in any part of the body, particularly the thyroid gland [7].

Known immunocompromising conditions include uncontrolled or unrecognized diabetes, HIV infection, neoplasia and long-term corticosteroid therapy [8]. Patients with diabetes have impaired collagen metabolism, poor cervical and oral vascularization, impaired neutrophil function, phagocytosis and chemotaxis [9,10].

In our patient, it was a case of unrecognized diabetes mellitus that favoured the thyroid infection; this derangement was responsible on his part for an glycemic imbalance that led to the discovery of diabetes.

Salmonella infection is dessiminated either by the hematogenous or lymphatic route from the intestinal tract [11].

In most cases of Salmonella thyroid abscesses, patients reported a history of treated or untreated gastroenteritis prior to thyroid involvement. In addition, diabetic patients suffer from reduced gastric acid secretion and motility, making them vulnerable to Salmonella infection.

Thyroid abscesses generally present with a clinical picture of febrile, painful cervical swelling, with altered general condition, with or without associated compressive signs and signs of hyperthyroidism reflecting rupture of thyroid follicles invaded by local infection and inflammation, and release of their hormonal content into the circulation [12]. In our patient, the presentation was an inflammatory right cervical mass with no clinical or biological thyrotoxicosis

Despite the symptomatology suggesting an infectious origin, other etiological possibilities should be discussed, including neoplasia such as medeullary or anaplastic thyroid carcinoma and De Quervain's subacute thyroiditis [13].

The evolution of cervical infections in diabetics is unpredictable. In this population characterized by chronic immunodepression aggravated by poor glycemic control, the spread of infection may be inevitable, with or without destruction of adjacent structures, jugular vein thrombosis and, in the ultimate cases, sepsis or mediastinitis [14], which underlines the importance of early diagnosis based on biology (CRP, blood count, thyroid function, glycemia...), cervical ultrasound, cervical CT scan, with well-managed treatment based on surgical drainage and antibiotic therapy guided by the results of bacteriological samples.

Depending on the extent and severity of the infection, treatment may be medical, conservative or radical surgery. Conservative treatment is based on pus drainage combined with antibiotic therapy guided by the sensitivity and resistance spectrum of the isolated germ**.** Protected amoxicillin, 3rd-generation cephalosporins or fluoroquinolones are often first-line antibiotics. The duration of treatment varies from 2 to 5 weeks, depending on the patient's condition, the existence of co-morbidities (such as diabetes), and the type of surgery performed [15].

Depending on the case, surgery consists of drainage, subtotal thyroidectomy or total thyroidectomy [16].

CONCLUSION

Despite the low prevalence of thyroid abscesses, particular attention must be paid to this type of infection, especially in patients with immunodepressive conditions such as diabetes.

Congenital malformations of the thyroglossal tract and nodular thyroid pathology are predisposing factors for Salmonella abscesses.

Finally, it is important to bear in mind the association of abscesses and thyroid neoplasia, so as not to overlook an evolving tumour pathology.

Declaration of Interest:

The authors declare that they have no direct or indirect interest (financial or in kind) in any private, industrial or commercial organization related to the presented subject.

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