

## Case Report

# Acute Suppurative Thyroiditis with Thyroid Abscess and Bilateral Pneumonia: A Case Report

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## Abstract

Acute suppurative thyroiditis (AST) leading to thyroid abscess is a rare clinical entity. The aim of this article is to demonstrate a case of severe bilateral pneumonia which originated from a thyroid abscess. The authors report the case of a 57-year-old woman with severe bilateral pneumonia of thyroid origin. The patient had a painful throat and dysphagia for 2 or 3 days. She also had a history of mild fever and hard breathing with a discreet cough 7 days prior to hospital admission. In the past few months, the patient had frequent pneumonias. The patient was treated with a culture-appropriate antibiotic and total thyroidectomy. Primary recommendations for treatment of complicated infections of thyroid origin consider a multidisciplinary approach. Recurrent pneumonia in patients with thyroid nodules may be the result of thyroid inflammation, and, in such patients, neck ultrasound should be conducted as part of the diagnostic workup.

**Keywords:** Acute suppurative thyroiditis, Pneumonia, Thyroid abscess

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## Introduction

Suppurative thyroiditis is rare because of the rich vascular/lymphatic supply, a well-developed fascial encapsulation and high iodine content of the thyroid gland. Acute suppurative thyroiditis (AST) leading to thyroid abscess is a rare clinical entity.<sup>1</sup> Thyroid abscess and AST represent only 0.1 to 0.7% of surgically treated thyroid patients.<sup>2</sup>

Despite improvements in diagnostic tests and the availability of modern antibiotic therapies, these infections continue to cause significant morbidity and mortality rates, especially when treatment is delayed. The aim of this article is to demonstrate a case of severe bilateral pneumonia of thyroid origin, and the necessity of interdisciplinary collaboration for early diagnosis and appropriate management.

## Case Report

A 57-year-old diabetic woman presented to our hospital after acute onset of aching and painful swelling with local erythema in the right anterior aspect of her neck. The patient had a painful throat and dysphagia for 2 or 3 days. She also had a history of mild fever and hard breathing with a discreet cough 7 days prior to hospital admission. Associated findings included severe general status, tachycardia, hoarseness, stridorous breathing 28 times per minute and restricted neck movements. The patient

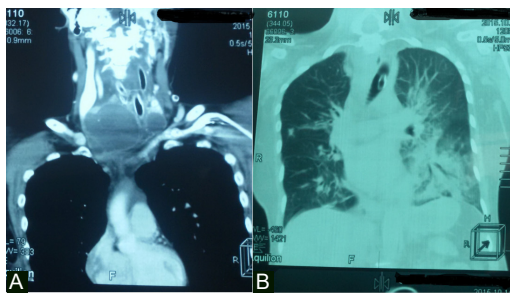
had a 10-year history of multinodal goiter with euthyroid status. In the past few months, the patient had frequent pneumonias that were treated with antibiotics.

Laboratory analysis revealed leukocyte count 13700 with 83% polymorphs; hemoglobin level at 12.5 g/dL, and C-reactive protein of 299.4 mg/L. Both urine and blood cultures were negative.

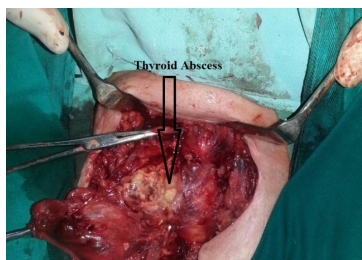
Neck multislice spiral CT (MSCT) showed presence of an enlarged right lobe of the thyroid gland with retrosternal propagation (Figure 1A). Chest MSCT showed bilateral pneumonia, which was more pronounced on the left side (Figure 1B). After a short preoperative preparation, a total thyroidectomy was done. Intraoperative, a right thyroid lobe abscess was found which directly abutted the trachea.

The tracheal wall was inflamed and softened (Figure 2). A tracheostomy was done due to threat of tracheal collapse. Endoscopic examination revealed necrotic tracheal mucosa below the level of the thyroid gland. Before closing the wound, a suction drain was placed. The removed thyroid gland was sent for a histopathological examination (benign disease), and the abscess content was sent for a microbiological examination (*Staphylococcus* species isolated).

Antibiotic therapy was begun empirically with Ceftriaxone (2 g/24 h) and Metronidazole (100 mg IV,



**Figure 1.** (A) Neck MSCT showed the presence of enlarged right lobe of the thyroid gland with retrosternal propagation, (B) Chest MSCT showed the bilateral bronchopneumonia, which was more pronounced at the left.



**Figure 2.** The right lobe abscess of the thyroid gland, which directly abuts the trachea.

8 h) and continued for 7 days with Tazocin (4, 5 mg IV, 8 h). The patient was transferred from the intensive care unit to the surgical department for further treatment.

## Discussion

The thyroid gland is well known to resist infections. There are many possible protective mechanisms that can defy a thyroid gland infection<sup>1</sup> such as a rich blood supply and a good lymphatic drainage, high concentrations of iodine that can have a bactericidal effect, the separation of the thyroid gland fascia of the neck, and other structures that produce hydrogen peroxide inside the gland. However, existence of a pyriform sinus fistula may be a predisposing factor for infection occurrence. Of the total number of patients with AST, 92% are of younger generations. The most common clinical manifestations of the thyroid gland inflammation are: fever, sore throat, and tenderness, anterior midline swelling in the neck, dermal erythema, dysphagia, hoarseness and limitation of head movements. The left lobe of the thyroid gland is more often affected by the inflammatory process than the right.<sup>3</sup> The most common causes of infection are *Streptococcus*, *Staphylococcus*, *Pneumocystis carinii*, and *Mycobacterium* species.<sup>4</sup> Unusual pathogens often occur in immunocompromised patients. *P. carinii*, *Klebsiella pneumoniae*, *Candida*, and *Brucella melitensis* occurs exclusively with patients suffering from AIDS, diabetes mellitus and leukemia.<sup>4</sup>

The spread of the infection from the thyroid gland to the lungs is very rare and has been described only in a few patients. Cannizzaro et al<sup>5</sup> report a very unusual case of thyroid abscess associated with a lung infection both caused by *K. pneumoniae*. The spreading of infection from the thyroid gland to the lung can be hematogenous or down the trachea.

The most important factors of infection spreading towards mediastinum are cervical anatomy with an almost enclosed space along the facial planes of the neck and the effects of gravity and recurrent changes in the negative intrathoracic pressures that occur with inspiration.

The most significant symptoms of infection that spread in the thorax are pyrexia, dysphagia, swelling and induration of the neck and upper parts of the chest, thoracic pain, dyspnea, hypoxia, and respiratory failure.

In this case, endoscopically verified necrotic and inflamed tracheal mucosis indicates a descendent spread of infection.

However, these symptoms are not always clear, and therefore can lead to delays in diagnosis. Such delays, definitely lead to further delays for adequate treatment. In this case, the first symptoms that occurred were respiratory in the form of repeated lung infections that were not clinically associated with the thyroid gland. An ultrasound examination of the thyroid gland with a laboratory test can in most cases be sufficient for a thyroid gland infection diagnosis. However, complicated infections that are clinically vague and which have potential chest propagation, require an MSCT examination.

In conclusion, as previously stated, primary recommendations for treatment of complicated infections of thyroid origin are based on a multidisciplinary approach. Appropriate and timely diagnosis as well as adequate conservative surgical treatment are all aimed at preventing life-threatening complications related to the infection of the thyroid gland.

Recurrent pneumonia in patients with thyroid nodules may be the result of thyroid inflammation, and a neck ultrasound should be conducted as part of the diagnostic workup in such patients.

## Authors' Contribution

AK, MD and ND conceived, designed and edited the manuscript. IP, LD, AZ did data collection and manuscript writing. TP and VK did review and final approval of manuscript.

## Conflict of Interest Disclosures

The authors have no conflicts of interest.


## Ethical Statement

The guidelines of the Declaration of Helsinki on medical protocol and ethics were followed in this study.

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