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Case Report

Ectopic Pulmonary Thyroid: A Case Report

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Introduction

Ectopic thyroid gland (ETG) is a not widespread form with low incidence of approximately 1 in every 100,000 to 300,000 in the general population [1,2]. It represents the abnormalities of thyroid tissue development [3,4]. Intrapulmonary ectopic thyroid is an unusual thyroid position and there are only a few such published cases in the literature. Its diagnosis is based on clinical examination, medical imaging and essentially nuclear medicine studies.

Cases Report

A 54 -year-old woman was diagnosed with hypothyroidism in 1999 and she was put on thyroid replacement treatment with Levothyroxine. In 2007, she had total thyroidectomy for multinodular goiter and the resected thyroid was not cancerous. In 2016, the patient was hospitalized in Pneumology Department of the CHU Mohamed VI of Marrakesh. The clinical presentation raised has 1 year, it was made by exertional dyspnea, top-right chest pain, a dry cough, irritability and extremities tremor and the general state was conserved. The clinical examination was without anomaly. The chest x-ray revealed a right paratracheale mass, rounded, with clear and regular outer limit, with tracheal compression, without costal lysis on the opposite (Figure 1). The computed tomography (CT) scans objectified a tissular process in right upper lobe, well limited, with regular outlines, which compresses the trachea and sheathes the right tracheo-bronchial structures without signs of invasion (Figure 2 and 3). The thyroid hormone test increased (T4L à 23,9 PMOL/L, T3L à 6 PMOL/L) and TSHus collapsed (TSHus: 0,005 mUI/l). The thyroid scintigraphy with 99mTc demonstrated a mass in the pulmonary right upper lobe fixing the 99mTc in relation to an ectopic thyroid tissue at this level (Figure 4 and 5). The CT-guided needle biopsy of the mass (Figure 6) was conducted and the histological analysis (Figure 7) was in favour of heterotopic thyroid. After surgical resection of a lung mass (Figure 8-10), the patient was diagnosed with ectopic intrapulmonary thyroid. The patient was put on thyroid replacement treatment with Levothyroxine and she was good euthyroid status. The post-operative evolution was favourable and the control chest x-ray was strictly normal (Figure 11).

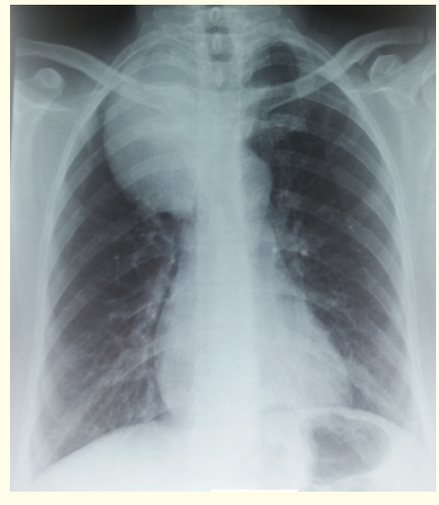

Figure 1: The chest x-ray revealed a right paratrachéale mass.

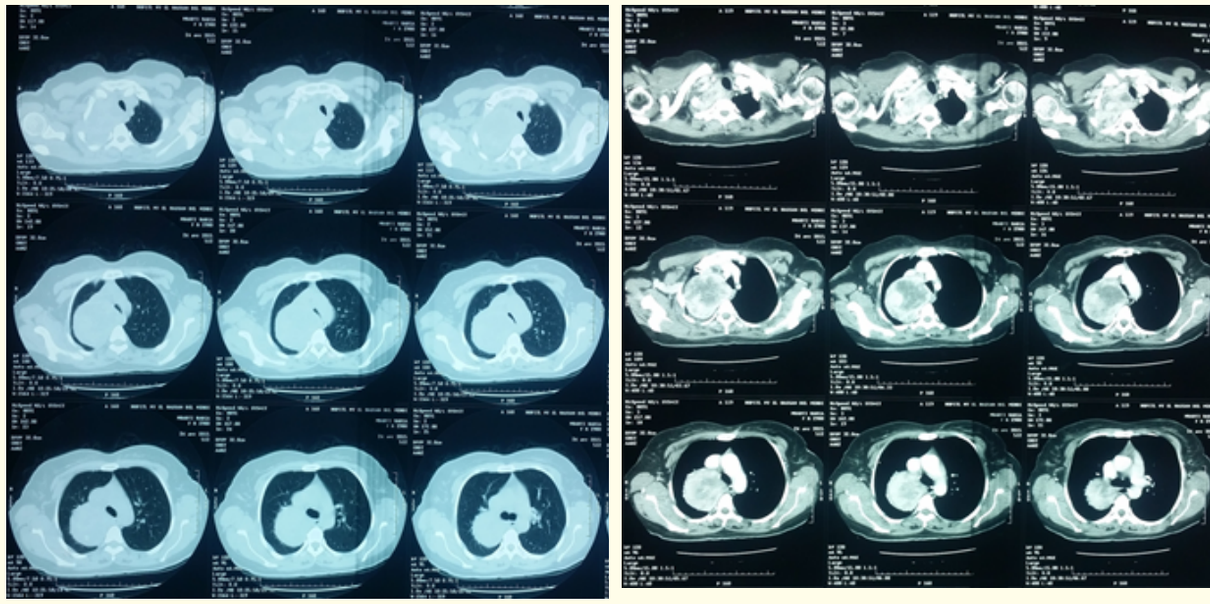

Figure 2 and 3: *The CT-scans objectified a tissular process in right upper lobe.*

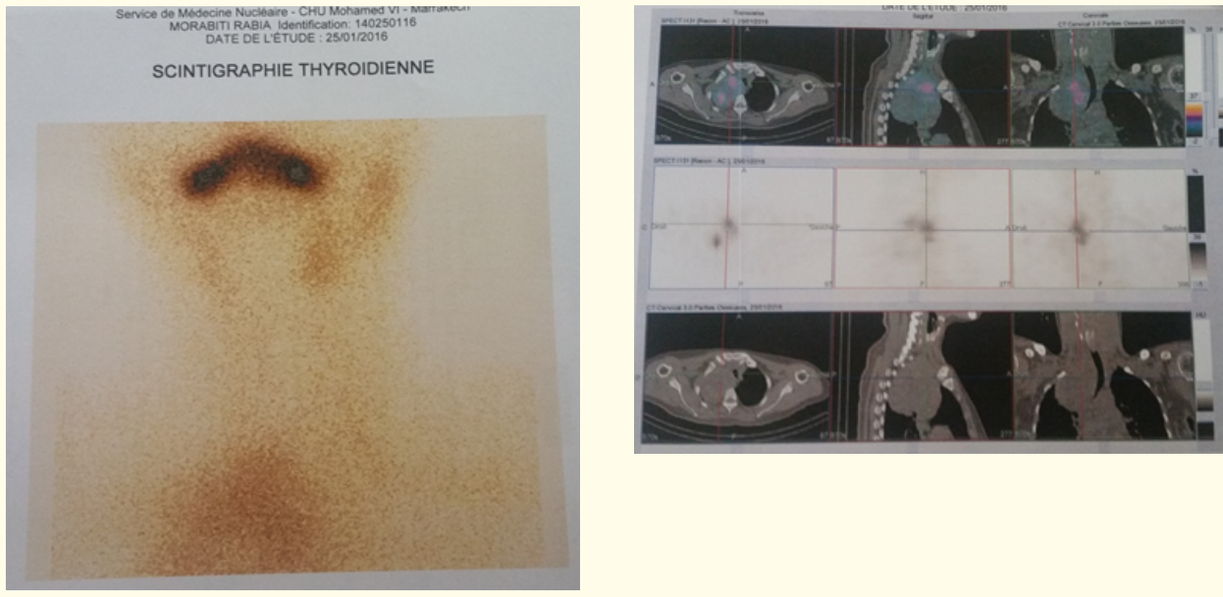

Figure 4 and 5: *The thyroid scintigraphy with 99mTc demonstrated a mass in the pulmonary right upper lobe fixing the 99mTc.*

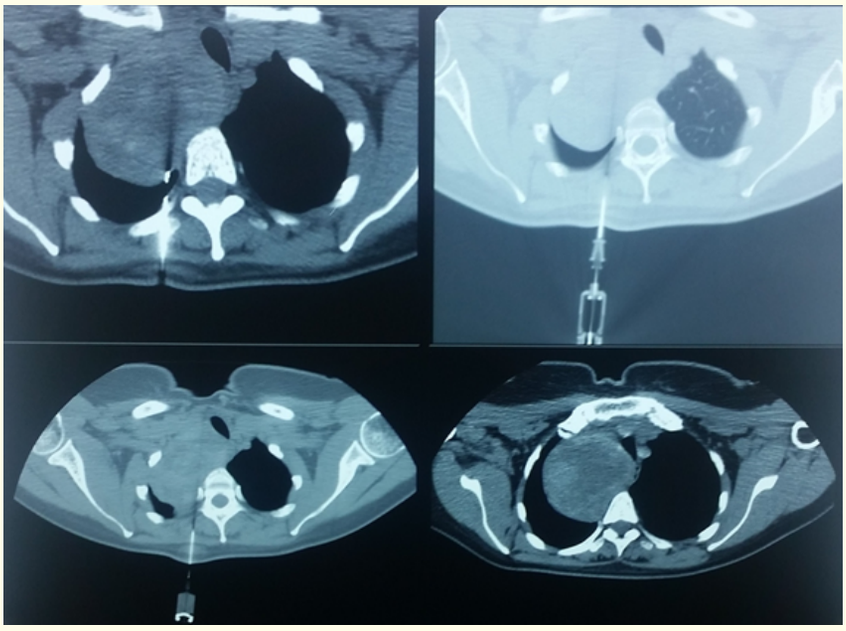

Figure 6: *The CT-guided needle biopsy of the mass.*

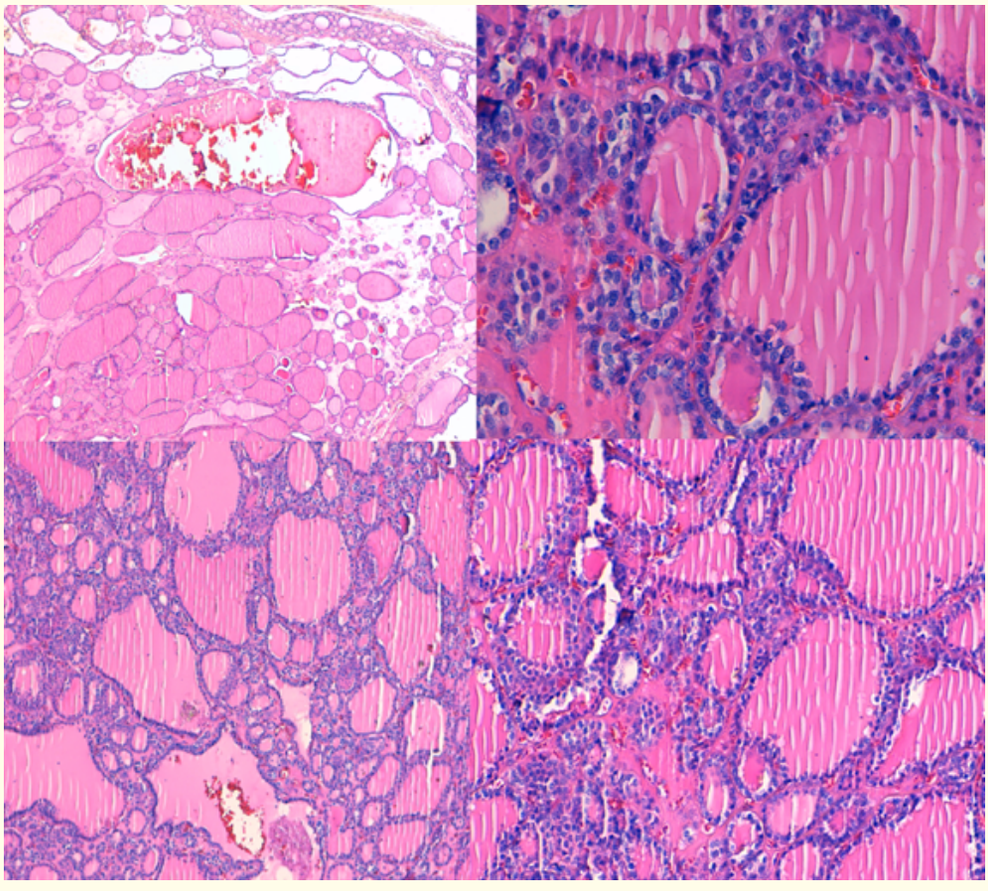

Figure 7: *Pathology study of both the biopsy and the mass showing normal thyroid tissue.*

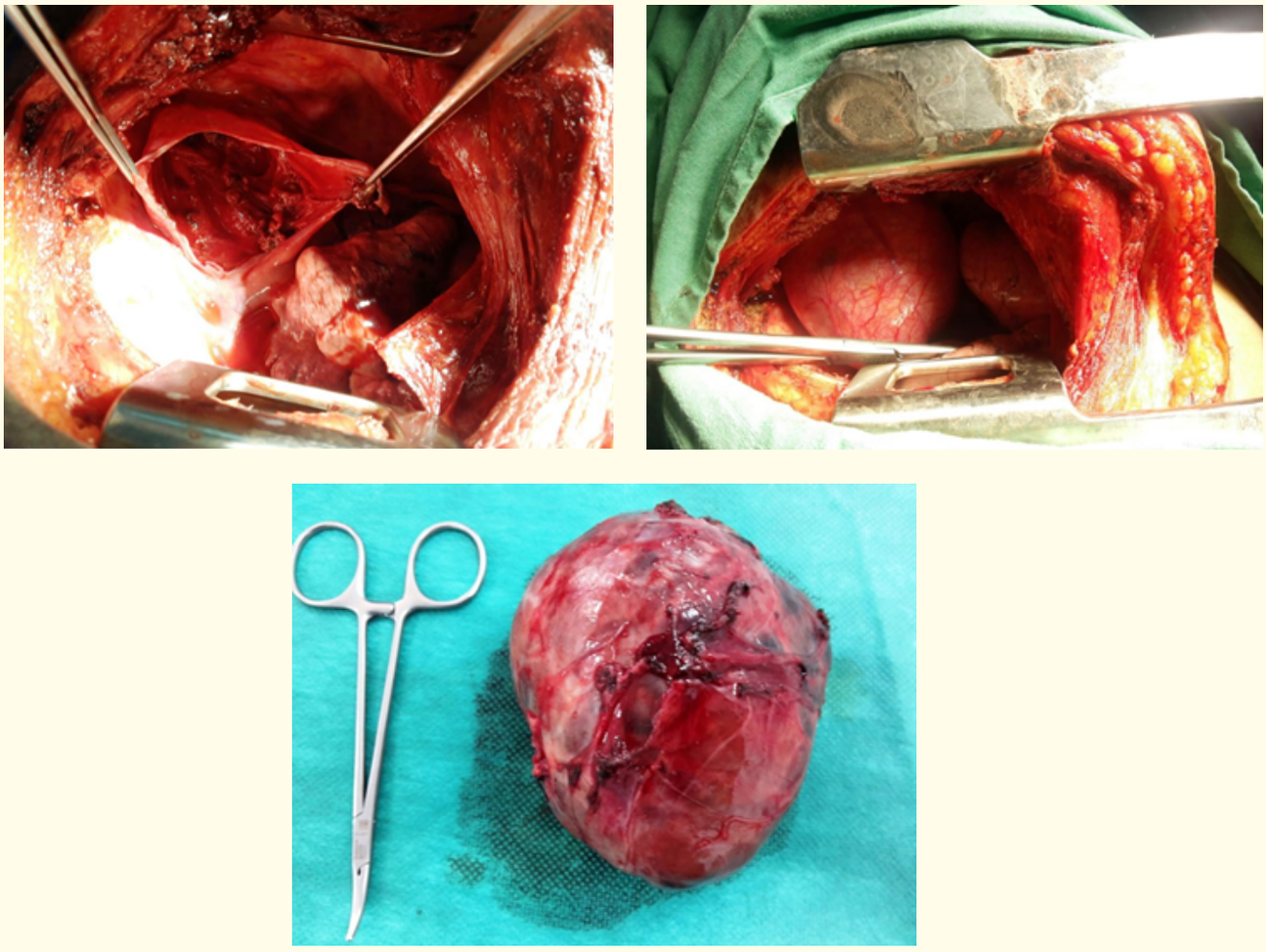

Figure 8-10: *Surgical resection of a lung mass.*

Figure 11: *The control chest x-ray after surgery.*

Discussion

The prevalence of ectopic thyroid is 1 in 4,000 to 8,000 in patients with thyroid disease [1]. It is more common in women and Asian populations [1]. We report a case of intrapulmonary heterotrophic thyroid tissue. There are a few cases published in the literature and they were diagnosed after surgical resection of a lung nodule and at autopsy respectively. Bando., *et al*. [3] reported a 83-year-old woman who underwent resection of a pulmonary tumor which turned out to contain benign thyroid follicles. Di Mari., *et al.* [5] reported a 77-year old male who was found to have thyroid tissue within the lung at autopsy. Abujrad., *et al.* [6] reported 75-year-old female with concomitant presence of normally located multinodular goiter and ectopic thyroid. Ho Hyun Ko., *et al.* [7] reported a 64-year-old woman with a history of thyroid cancer treated by thyroidectomy who had abnormal thyroid function and she was diagnosed with ectopic intrapulmonary thyroid after surgical treatment. Saleh HA., *et al.* [8] reported a case of heterotropic thyroid tissue in the lateral chest wall but there was no extension of the heterotropic thyroid tissue into the lungs.

An embryologic explanation for midline heterotropic thyroid tissue is plausible since the thyroid is derived from the thyroid diverticulum which is located in a midline position. It is more difficult to explain the location of heterotropic thyroid tissue in the lung parenchyma based on embryology. However, one could reason on two possibilities. The first is that during the embryological period, abnormal contact of the thyroid and respiratory diverticulae may occur, these are anatomically close to each other and both come from the primitive foregut endoderm. As a result, thyroid cells can implant in the respiratory diverticulum and eventually in the lungs. The second possibility is the differentiation of lung cells into thyroid cells (metaplasia). In this context, it is interesting to note that in animal models, a sonic hedgehog deletion (a gene crucial to foregut development) has been associated with thyrocyte differentiation in aberrant locations such as the trachea and primitive respiratory epithelium [9].

Ectopic thyroid is usually asymptomatic. Various symptoms may exist depending on the location and size. Intrapulmonary ectopic thyroid, especially paratracheal localization, can be manifested by dyspnea, dysphonia or dysphagia with sometimes foreign body sensation. However, the majority of published cases of intrapulmonary ectopic thyroid are asymptomatic as in this case report. It is revealed during X-ray examination and CT scans, and may cause dry cough, dyspnea, hemoptysis, aphagia, and superior vena cava syndrome. Also, it is noted that orthotropic thyroid coexists in all cases of intrapulmonary thyroid [10,11].

Thyroid scintigraphy with 99mTc, 131I or 123I has a high sensitivity in the diagnosis and evaluation of neck swelling, especially at the midline [12]. Other radiologic examinations like plain X-rays, computed tomography (CT) scans or magnetic resonance imaging (MRI) may also be helpful. Chest X-ray may locate goiter, tracheal displacement and compression, calcifications and a soft tissue mass. CT and MRI can be used to determine goiter malignancy, to measure loco-regional extension in order to consider surgical management. Bronchoscopy and ultrasound puncture allow a histological diagnosis, as well as thoracoscopy and mediastinoscopy [13].

There are several differential diagnosis of the ectopic intrapulmonary thyroid especially thymoma, germ tumor, neuroma and thyroid cancer metastasis. Malignant transformation is found in 10% of cases of ectopic thyroid. The medical or surgical management of ectopic intrapulmonary thyroid should consider the patient's age, symptoms and their severity, thyroid hormone levels, presence of orthotropic thyroid and finally malignancy potential [14]. The choice of surgical modality depends on the intrapulmonary location of the thyroid tissue, including sternotomy or thoracotomy and in some cases thoracoscopy may be useful [7].

Conclusion

Intrapulmonary heterotrophic thyroid tissue is a very rare entity. It is usually symptomless but diverse symptoms may exist depending on the location and size. Surgery can be performed in order to diagnose, to determine malignancy and treat the ectopic thyroid. Our case report draws attention to the occurrence of intrapulmonary heterotrophic thyroid tissue. While rare, it must be evoked in front of any nodule or lung mass.

Conflicts of Interest

The authors do not declare any conflict of interest.

Author's Contributions

The authors have participated in the patient care and the manuscript writing. The final version has been reviewed and approved by all authors.

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We thank deeply the thoracic surgery department team for providing us with pictures of the surgical extraction of the mass.

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