Hyperfunctioning papillary thyroid carcinoma: A case report with literature review

Abdulwahid M. Salih a, F.H. Kakamad b,*, Han Nihad c

a Faculty of Medical Sciences, School of Medicine, Department Surgery, University of Sulaimani, François Mitterrand Street, Sulaymaniyah, Iraq
b Faculty of Medical Sciences, School of Medicine, Department Cardiothoracic and Vascular Surgery, University of Sulaimani, François Mitterrand Street, Sulaymaniyah, Iraq
c Faculty of Medical Sciences, School of Medicine, Department Pathology, University of Sulaimani, François Mitterrand Street, Sulaymaniyah, Iraq

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ABSTRACT
INTRODUCTION: Thyroid malignant tumors are rarely associated with hyperfunctioning thyroid. The incidence of this co-incidence is highly variable. Here we report a rare case of papillary thyroid cancer associated with hyperthyroidism with brief literature review.

CASE REPORT: A 40-year-old male, presented with palpitation, excess sweating and weight loss for one month duration. There was asymmetrical swelling of the neck, more on right side, mobile. Free T3: 11.09 pmol/L, free T4: 34.41 pmol/L, TFT: less than 0.005 mIU/ml. Neck ultrasound showed features of background thyroiditis. Left lobe contained 9 × 7 × 5 mm nodule with irregular outline and multiple dots of calcification, other nodules are of the same features. Under ultrasound guide, fine needle aspiration cytology showed features of papillary carcinoma. After preparation, total thyrodeectomy done and the result of histopathological examination confirmed papillary thyroid carcinoma. The patient was put on 0.2mg thyroxine daily.

DISCUSSION: Literature review has showed an increasing number of papers reporting the association of high level of thyroid function tests and thyroid malignancy. The cause of high level of TH in thyroid malignancy is thought to be due to an active mutation of the gene of TH receptor. Niepomnissze and colleagues found that a combination of TSH receptor mutations and Ki-RAS was the main etiological factor for hyperfunction of the thyroid malignancy.

CONCLUSION: Although the coexistence of them is rare, thyroid malignancy should be put in the differential diagnosis of hyperthyroid goiter.

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1. Introduction

According to the literature, thyroid malignant tumors are rarely associated with hyperfunctioning thyroid. The incidence of this co-incidence is highly variable reported to be as low as 0.15% [1].

In daily practice, thyroid mass detected either by physical examination or by ultrasound in an individual with high thyroid function tests is suggestive for a benign condition [2]. Malignant thyroid nodules appear as cold nodules on scintigraphy and they are clinically euthyroid [3]. Hyperthyroidism associated with thyroid carcinoma is a rare presentation [3]. Here we report a rare case of papillary thyroid cancer associated with hyperthyroidism with brief literature review. The work has been reported in line with the CARE criteria [4].

1.1. Patient information

A 40-year-old male, Kurdish employee presented with palpitation, excess sweating and weight loss for one month duration with negative past-medical, past-surgical and family history.

1.2. Clinical findings

A symmetrical swelling of the neck, more on right side, mobile, non-tender, with negative transillumination test. No lymph node enlargement. General and systemic examination were negative for signs of metastasis.

1.3. Diagnostic assessment

Complete blood count was normal. Free T3: 11.09 pmol/L, free T4: 34.41 pmol/L, TFT: less than 0.005 mIU/ml. Thyroglobulin was normal. Thyroid antibodies were negative. Neck ultrasound showed features of background thyroiditis. Left lobe contained 9 × 7 × 5 mm nodule with irregular outline and multiple dots of

* Corresponding author.
E-mail address: fahmi.hussein@univsul.edu.iq (F.H. Kakamad).

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calcification, other nodules (2 in right one in left) are of the same features, largest one in right lobe, of about 28, 32, 21 mm in size. No evidence of lymph node metastasis was seen. Under ultrasound guide, fine needle aspiration was performed for the right and left sides. The results showed follicular epithelium with crowded sheets and micronodular formation, the oval nuclei enlarged with coarse chromatins, nuclear grooves and pseudoepithelium.

1.4. Therapeutic intervention

The patient was put on rapid preparation for operation by propranolol (40 mg*3), prednisolone (20 mg*2) and methimazole (15 mg*3) for 2 weeks. Thyroid function tests were normal 2 days before operation. Preoperative intravenous antibiotic (1 g of ceftriaxone) has been given. Under general anesthesia, total thyroidectomy was done. There was neither lymph node involvement nor infiltration of the surrounding tissue. The result of histopathological examination showed multicentric characteristic oval nuclei with grooving confirming papillary thyroid carcinoma (Fig. 1).

1.5. Follow-up and outcomes

The patient stayed in hospital for onenight. He was put on 0.2 mg thyroxine daily and submitted to I-131 treatment. Clinical and laboratory examination was normal one month after operation. The result of isotope scan was negative.

2. Discussion

Patients with hyperthyroidism used to be regarded as having low risk for a thyroid cancer. Literature review has showed an increasing number of papers reporting the association of high level of thyroid function tests and thyroid malignancy [1–3,5]. Gabriele et al. showed 7 patients of thyroid cancer among 425 hyperthyroid patients. Five of them were Papillary carcinoma and the other 2 were follicular carcinoma. None of Graves’ patients (15%) had thyroid malignancy [6]. Baldys et al. reported a young male with graves’ disease and papillary microcarcinoma [7]. Kinkel et al. also published a report of a middle age female with hyperthyroidism and Graves’ diseases. Twelve months after antithyroid medication thyroidectomy was performed to treat recurrence and histopathological examination showed papillary cancer [8]. Al-Omari et al. reported of a 65-years-old male who was diagnosed as case of Graves disease and radioisotope scanning showed diffuse goiter and a cold nodule. Fine needle aspiration suggested malignancy and confirmed by histopathological examination of the specimen after total thyroidectomy [9]. Other 2 studies found 1.1% and 2.1% of thyroid carcinoma associated with high level of thyroid hormone (TH) [10,11].

Harach and coworkers described the microscopical findings of 73 hot nodules in which carcinoma were observed in 6 patients (8.2%) [12]. According to De Rosa et al. only 18 patients of hyper-functioning papillary thyroid carcinoma have been reported in last 25 years. They concluded that high functioning goiter does not exclude carcinoma during diagnostic work up of hot nodules [13].

Two articles reported papillary thyroid carcinoma with hyperthyroidism and extensive distant metastasis and their authors contributed the high level of (TH) these 2 patients to bone metastasis [9,14].

The cause of high level of TH in thyroid malignancy is thought to be due to an active mutation of the gene of TH receptor [15]. Niepomniszcze and colleagues found that a combination of TSH receptor mutations and Ki-RAS was the main etiological factor for hyperfunction of the thyroid malignancy [5].

Although the coexistence of them is rare, thyroid malignancy should be put in the differential diagnosis of Graves’ disease and hyperthyroid goiter. Thorough history and physical examination should be done and necessary investigation should be sent in order not to miss this rare but important association.

2.1. Patient perspective

The patient satisfied and was comfortable one month after operation.

Conflict of interest

There is no conflict of interest.

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Ethical approval

Approval has been taken from bioscience center.

Consent

Consent has been taken.

Author contribution

Abdulwahid M. Salih: Surgeon performed the operation and follow up.
Fahmi H. Kakamad: writing the manuscript and follow up.
Han Aube: Examining the specimen, follow up.

Guarantor

Fahmi Hussein Kakamad.

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