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A rare case of papillary thyroid carcinoma (PTC) presenting as multinodular goiter (MNG) successfully operated with total thyroidectomy (TT)

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ABSTRACT

An enlarged, diffusely heterogeneous thyroid gland is known as multinodular goiter; papillary thyroid cancer is the utmost obvious type of this condition (MNG). The typical symptom of thyroid goiter, a prolonged benign swelling of the thyroid gland, is a generally asymptomatic anterior neck lump that can occasionally expand to the mediastinum. Retropharyngeal goiters usually manifest themselves. This case is of a 90-year female with large anterior neck swelling for 25 years associated with pain relieved by medications. Computed tomography (CT) of the neck suggests a heterogeneously enhancing solid cystic lesion suggestive of multinodular goiter. She underwent a total thyroidectomy; the postoperative period was uneventful. Histopathological examination suggested papillary thyroid carcinoma (TNM staging pT3apNxpmx). The patient had a stable postoperative period and got discharged within 15 days after the surgery. The prognosis of the patient is good.

Keywords: Multinodular goiter, Thyroid, Thyroidectomy, Papillary Carcinoma.

1. INTRODUCTION

Although thyroid carcinoma (TC) is a relatively unusual tumor, it is the utmost obvious type of endocrine gland cancer. Ionizing radiation, thyroid adenoma and MNG are risk factors identified by epidemiology. Goiter, with many nodules, no longer serves as a reliable predictor of a benign condition. An enlarged thyroid gland with numerous distinct nodules can be felt as a multinodular goiter (Botrugno et al., 2011). The pathogenesis and etiology of the MNG are not well understood. The numerous causes include a moderate dietary iodine deficit, a minor disruption of hormone synthesis, elevated iodine removal from the kidney and the existence of thyroid-stimulating

immunoglobulins. In the past, patients with multinodular goiter were thought to have a lesser risk of developing cancer than those with isolated thyroid nodules. However, the incidence of cancer in multinodular goiter is also increasing, according to recent studies (Erbil et al., 2008). Thyroid nodules are essential clinically because they can rule out cancer. Since many individuals with thyroid cancer also have a multinodular goiter, the danger of malignancy in this condition shouldn't be taken lightly (Apostolou et al., 2021).

2. CASE PRESENTATION

We present a 90-year female who came to the medicine outpatient department with chief complaints of swelling in the anterior neck for 25 years and difficulty swallowing with no other comorbidities. The patient was alright 25 years back when she developed swelling in the right side of her thyroid region, which was insidious in onset and gradually progressive. Initially, it was of size measuring approximately 1x1 cm, but it progressed to the present size of 10x13 cm associated with pain relief on taking medications. She was shifted to the surgical ward for further management. On local examination, a single rounded swelling extending from above thyroid cartilage to the sterna notch vertically and 0.5 cm medial to sternocleidomastoid on the left to 1 cm lateral to sternocleidomastoid on the right 10x8x12 cm, moving with deglutition, non-tender, soft cystic in consistency, mobile in both horizontal and vertical planes, with irregular surface and well-defined margin with no visible pulsation and no retrosternal extension (Figure1). On systemic examination, no obvious abnormality was detected.



Figure 1 clinical image showing a single globular swelling extending from above thyroid cartilage to the sternal notch vertically and 0.5 cm medial to sternocleidomastoid on the left to 1 cm lateral to sternocleidomastoid on the right 10x8x12 cm

All routine investigations and thyroid profiles were within a normal range. On radiological examination, the ultrasonography (USG) of the neck was suggestive of an ill-defined lesion in the neck measuring 16x8 cm with multiple anechoic cystic areas with solid components, showing hypervascularity on the Doppler. Later the X-ray of the neck was advised; it was suggestive of bilaterally enlarged thyroid lobes with well-defined prominent, exophytic, lobulated, heterogeneously enhancing solid cystic lesions arising from bilateral lobes and isthmus with few calcific foci measuring 5.0x3.9x3.8 cm, posteriorly compressing trachea and displacing common bilateral carotid posteriorly, fat planes between adjacent structures maintained suggestive of multinodular goiter (Figure 2).

The patient was undergone for total thyroidectomy and intraoperative tracheomalacia, for which an ENT opinion was taken and no active intervention was advised. The mass from the removed thyroid gland was sent for histopathological analysis, which confirmed the finding of papillary thyroid carcinoma (PTC). The Gross specimen was solid and cystic with a cut section showing papillary excrescences with few areas of calcification (Figure 3).



Figure 2 shows the thyroid appears enlarged and bulky with a large exophytic well-defined solid cystic lesion arising from the thyroid causing mass effect as described above s/o multinodular goiter with colloid degeneration



Figure 3 Shows the gross specimen was solid and cystic with a cut section showing papillary excrescences with few areas of calcification

After the surgery, she was shifted to the surgical intensive care unit for observation. She was treated with antibiotics (injection ceftriaxone 1.5gm, metronidazole 100ml, amikacin 500mg) and injection Neomol 100ml. The patient was stable postoperatively. The drain was removed on 2nd day postoperatively, the alternate suture was removed on day 11 and the continuous suture was removed on day 12 postoperatively. The scar line was healthy and the patient was regularly discharged with followup advice.

3. DISCUSSION

Papillary thyroid carcinoma (PTC) often has a favorable prognosis and a low rate of recurrence when compared to the majority of malignant tumors. The prognostic factors for PTC comprise age, sex, tumor size, lymph node enlargement and extrathyroidal extension. Upper aerodigestive tract (ADT) incursion by PTC among the extrathyroidal extension is a sign of more aggressive tumor behavior, consisting a subset of patients at an increased risk of recurrence and death (Zhang et al., 2019). In endemic iodine-deficient areas, multinodular goiter is the most obvious cause of thyroidectomy. Due to numerous nodules, it is challenging to use fine needle aspiration biopsy to evaluate for thyroid cancer before surgery in a multinodular goiter and thyroid cancer is frequently discovered unexpectedly after surgery (McCall et al., 1986). It is proposed that more excellent pathologic diagnosis of clinically insignificant thyroid neoplasia, altering levels of iodine nutrition and ionizing radiation exposure are the causes of the recent worldwide increase in thyroid cancer incidence (Memon et al., 2010). For many years, thyroidectomy plus radioiodine therapy (RIT) plus L-T4 suppression therapy has been regarded as the standard of care and its clinical effectiveness has been well established (Donohoe et al., 2020).

The most efficient way to completely cure thyroid cancer is thought to be using total thyroidectomy (TT). TT has demonstrated a similar or even reduced incidence of postoperative problems compared to partial or subtotal thyroidectomy. In addition, TT is

linked to a decreased risk of disease recurrence (Askitis et al., 2013). It is the preferred procedure for a patient with thyroid cancer, graves' disease, Basedow disease or toxic multinodular goiter. In recent years, total thyroidectomy has been a surgical option for treating individuals with multinodular goiter, particularly in areas where iodine deficiency is widespread (Giles et al., 2004). However, our patient underwent total thyroidectomy to overcome the complaints of local pain and difficulty swallowing but was discharged with calcium and thyroxine; no radiation was advised owing to the age factor and its complications.

4. CONCLUSION

The most frequent type of thyroid cancer from radiation exposure is papillary thyroid carcinoma (PTC), the most common type of well-differentiated thyroid cancer. The link with radiation is possibly the most significant in the etiology of papillary thyroid cancer. Due to the rising use of radiation therapy in the 20th century, papillary thyroid tumors emerged as "second primary" in survivors of malignancies of different organs whose tumors had received radiation therapy. External-beam radiation has been proven beneficial when thyroid cancer invades the trachea after conservative surgery and leaves a microscopic or gross residuum. Also, total thyroidectomy is a very efficient way to cure thyroid cancer and decreased risk of disease recurrence.

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Author's contributions

Equal contribution of all authors.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. No Patient identifying information was included in this manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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