

# Papillary Carcinoma of the Thyroid Presenting Primarily as Cervical Lymphadenopathy

## An approach to management

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## ظهور السرطانة الحليمية للغدة الدرقية كورم في عقد الرقبة الليمفاوية أسلوب العلاج

نورمان او مكادو ، براديب ج شوبرا ، عايشة الحمداني

**الملخص:** السرطانة الحليمية للغدة الدرقية غالبا ما تظهر كورم محسوس في الغدة الدرقية . وقد يصاحبها ألم . بحة في الصوت . صفير مع الشهيق . ألم أثناء البلع و نادرا ما تظهر كورم في العقد الليمفاوية لوحدها مع وجود غدة درقية سليمة . وهذه الصورة قد تسبب مشكلة في التشخيص والعلاج . هذا تقرير عن امرأة متوسطة العمر جاءت تشكو من تورم في العقد الليمفاوية وبعد أخذ عينة بواسطة إبرة شَقَطْ نحيفة تبين انه سرطانة حليمية للغدة الدرقية . كان الفحص السريري والأشعة التشخيصية للغدة الدرقية طبيعيا . فحص الرقبة أكد سلامة الغدة الدرقية مما تبين أن غدة العنق الليمفاوية متصلة بالوريد الوداجي الغائر . خضعت المريضة لاستئصال الغدة الدرقية الكامل واستئصال الغدد الليمفاوية من جانب واحد واستئصال الجزء المتصل من الوريد الوداجي الغائر . الفحص الخلوي المرضي للعينة أكد وجود انتقال سرطاني في العقدة الليمفاوية و سرطانة حليمية صغيرة بحجم 2 م من الغدة الدرقية المستأصلة . المسح الضوئي باليود المشع بعد العملية أكد عدم انتشار المرض . المريضة أخضعت لعلاج الثيروكسين مدى الحياة . ما زالت المريضة في المتابعة الدورية منذ أربع سنوات وهي بصحة جيدة .

**الكلمات الرئيسية:** استئصال الغدة الدرقية . سرطان الغدة الدرقية . النقيلة الليمفاوية . تقرير حالة . عُمان .

**ABSTRACT:** Papillary carcinoma of thyroid usually presents as a palpable thyroid mass. This could be associated with pain, hoarseness, stridor or dysphagia. Rarely, it presents solely as cervical lymphadenopathy in the presence of an otherwise grossly normal thyroid gland. This could pose management problems. We report here a middle-aged lady who presented with cervical lymphadenopathy which on fine needle aspiration cytology was confirmed as metastatic papillary thyroid carcinoma. The thyroid gland was, however, normal on clinical examination and radiological investigations. Neck exploration confirmed a grossly normal thyroid gland; however, the cervical lymph node was found to invade the internal jugular vein. She underwent a total thyroidectomy and unilateral functional block dissection with resection of the involved segment of the internal jugular vein. Histopathology confirmed metastasis in the lymph node and a 2mm sized microcarcinoma in the resected thyroid gland. A radioactive iodine scan in the postoperative period revealed no other metastasis. The patient was prescribed lifelong thyroxine. She is on regular follow-up and 4 years following surgery continues to do well.

**Key words:** Thyroidectomy; Carcinoma of thyroid; Lymphatic metastasis; Case report; Oman.

**T**HYROID CARCINOMA PRESENTING with cervical lymphadenopathy as a sole presentation is uncommon.<sup>1,2,3</sup> As metastatic cervical lymph nodes could potentially arise from several primary sources in the head and neck region, management could pose problems. Investigations may fail to reveal a primary carcinoma in the thyroid gland and hence fine needle aspiration cytology (FNAC) or biopsy is of the primary importance to establish the origin of primary tumour.<sup>5,6</sup> Once established, management should include complete resection of the primary and metastatic carcinoma, post-operative radioactive iodine scanning and

possible radioactive iodine treatment and lifelong replacement thyroxine.

## Case Report

A 62 year-old lady presented with a 5 month history of an enlarging right neck mass [Figure 1]. She had no associated symptoms of change in voice, dysphagia, stridor, epistaxis, haemoptysis or haematemesis. Examination revealed a firm, non-tender swelling at the anterior border of the right sternomastoid muscle which measured 3 x 3cms, with restricted mobility. A detailed examination



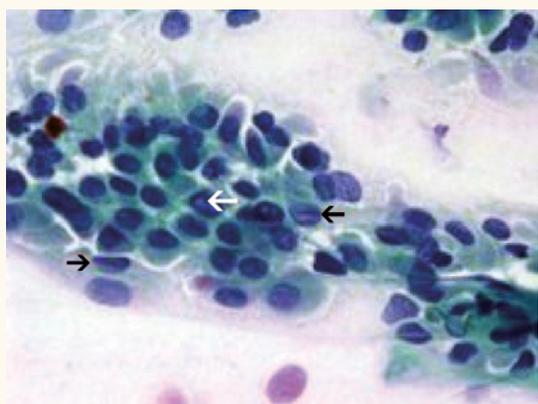
**Figure 1:** Isolated cervical lymphnode metastasis with no apparent thyroid enlargement.

of the head and neck region showed no intraoral lesions. The thyroid gland was not palpable and she had no other cervical lymphadenopathy. The basic investigations, including a complete blood count, electrolytes and thyroid function tests, were all within the normal range. An indirect laryngoscopy was normal. An ultrasound scan (US) of the thyroid showed no abnormality. A FNAC of the neck mass revealed groups of follicular cells exhibiting nuclear overlapping, nuclear grooves and occasional intranuclear inclusions, consistent with metastatic papillary carcinoma of the thyroid [Figure 2]. The patient underwent neck exploration which revealed a grossly normal thyroid gland and an isolated right-sided midjugular lymph node invading the internal jugular vein. A total thyroidectomy and a functional right-sided block dissection were performed with excision of a segment of the involved internal jugular vein, sparing the sternomastoid muscle and spinal accessory nerve [Figure 3]. Histopathological examination confirmed metastatic classic papillary carcinoma in the lymph node and a 2mm sized focus of papillary microcarcinoma in the right lobe

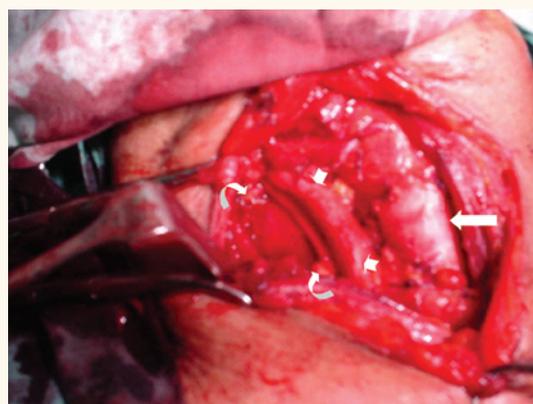
of the excised thyroid gland with nuclear features characteristic of papillary carcinoma [Figure 4]. The patient had an uneventful post-operative period. A radionuclide scan performed 6 weeks later to look for other potential metastasis revealed none. She has been on a replacement dose of thyroxine 100µg per day to lower her thyroid stimulating hormone level to below 0.1 IU. When last seen, 4 years after her surgery, she was in good health.

## Discussion

Thyroid carcinoma commonly presents as a dominant thyroid mass in an otherwise asymptomatic patient.<sup>1,2,3</sup> Less common presentations include isolated cervical lymphadenopathy, as in our patient, recurrent laryngeal nerve palsy, parapharyngeal masses, cervical cysts, haemoptysis and pulmonary metastasis, all of which could pose a diagnostic challenge.<sup>2,3</sup> Even though a lateral neck mass as the initial manifestation of thyroid carcinoma is reported in some series to be present in as much



**Figure 2:** Fine needle aspiration cytology of cervical mass, pap stain x 100 showing follicular cells with nuclear overlapping, inclusions (white arrow) and grooves (black arrows) suggestive of thyroid papillary metastasis.



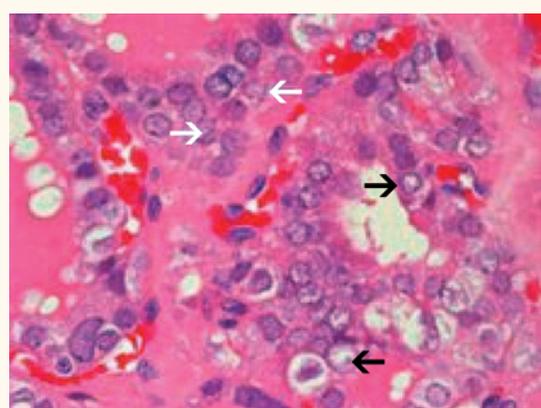
**Figure 3:** Operative field view revealing the exposed trachea (long arrow) after completion of total thyroidectomy and the exposed carotid artery (short arrows) and the cut ends of resected internal jugular vein (curved arrows) following functional block dissection

as 10-21% of all thyroid carcinomas,<sup>1,2,3</sup> they are usually uncommon. Clinical examination of the thyroid gland in such patients may fail to disclose easily a palpable dominant intrathyroidal mass or nodularity.<sup>1,3</sup> The majority of the palpable cervical masses are located in the midjugular lymph node (51%) and low jugular lymph node (33%) although supraclavicular (2%), posterior cervical (1.7%) and high jugular lymphadenopathy (10%) are also reported.<sup>1</sup> These clinical findings are supported by the pattern of distribution and location of the metastatic cervical lymph node demonstrated in the pathology specimen of modified radical neck dissection.<sup>1</sup> The diagnosis of metastatic thyroid cancer should be considered in patients presenting with isolated cervical lymphadenopathy despite a clinically normal thyroid gland. However, further evaluation is necessary to exclude other primary tumours of the scalp and head and neck region.

The investigations used to assess the cervical mass of thyroid origin include radionuclide scans, US, computed tomography (CT) scans, magnetic resonance imaging (MRI) and FNAC.<sup>3-8</sup> The diagnostic usefulness of radionuclide scanning of the thyroid in patients with isolated cervical lymphnode metastasis from thyroid carcinoma has been disappointing as less than 50% of the scans performed revealed a cold nodule in the thyroid.<sup>2,4</sup> A combined ultrasonography and radionuclide scan of the thyroid has been reported to demonstrate the mass in 75% of these patients.<sup>1</sup> Twenty-five per cent of patients with thyroid

malignancy may have normal thyroid imaging and a clinically normal thyroid gland, as in our patient, and hence the clinician should still suspect a papillary carcinoma in the thyroid gland in the presence of lymph node metastasis.<sup>1,2</sup>

However recently, US has been reported to be very useful in predicting the risk of malignancy in nonpalpable lesions.<sup>8</sup> In a recent review to assess the risk of malignancy in nonpalpable thyroid nodules using US and colour Doppler, features including irregular or blurred nodular margins, an intranodular vascular pattern and microcalcification were found to be closely linked to neoplastic lesions.<sup>8</sup> On the other hand, a hypoechoic appearance or the presence of solitary lesions were not independent risk factors for malignancy in nonpalpable thyroid nodules.<sup>8</sup> The presence of microcalcification presented a higher specificity for malignancy (95%) than the findings of irregular margin (85%) or intranodular vascular images (80.8%), but the predictive value of microcalcification was blunted by their low sensitivity (29%).<sup>8</sup> Cytological evaluation of nonpalpable nodules, presenting with a hypoechoic appearance in conjunction with at least one independent US risk factor, succeeded in identifying the vast majority of nonpalpable thyroid tumours. Papini *et al.* recommended that US guided FNAC should be performed on all 8-15mm hypoechoic nodules with irregular margins, intranodular vascular spots and microcalcification.<sup>8</sup> Nonpalpable lesions of the thyroid without sonographic features of risk



**Figure 4:** Haematoxylin and eosin stain x 100 showing thyroid tissue with colloid filled follicles lined by follicular cells exhibiting nuclear overlapping, clearing (black arrows) and intranuclear grooves (white arrows)

for malignancy should be followed up by repeating clinical and ultrasound evaluation after 6-12 weeks.<sup>8</sup>

Scanning by US is also useful for assessing the lateral cervical mass by defining it and for differentiating its solid or cystic nature.<sup>5</sup> While cystic swellings in the neck are likely to be of branchial cleft origin, several reports suggest the possibility of papillary carcinoma metastasis in the node when cystic.<sup>5</sup> This is particularly so if, on US, the cystic mass reveals an internal lining that is thickened and irregular.<sup>5</sup> Both CT and MRI scans, while providing cross-sectional imaging of the neck mass, may also detect other cervical lymphadenopathies particularly those in the retropharyngeal and parapharyngeal spaces.<sup>7</sup>

The cytological nature of the neck mass and the possibility of metastasis is initially determined by FNAC.<sup>1,6</sup> FNAC is well tolerated, minimally invasive, reliable in the hands of an experienced cytologist and will not compromise future neck dissection.<sup>1,6</sup> If FNAC is inconclusive and the possibility of metastasis in the node is strong, a thorough search for other possible primary sites in the oropharynx, larynx and head and neck region should be carried out. In the event that an open biopsy is required to establish the diagnosis, care should be taken in placing the incision so that it will not jeopardise the outcome of future neck dissection if required.<sup>1</sup>

The recommended treatment of patients with thyroid carcinoma presenting predominantly as cervical lymph node metastasis is total

thyroidectomy with appropriate ipsilateral and, if necessary, contralateral modified radical neck dissection.<sup>1,9,10</sup> The outcome is generally good when surgical management is followed by postoperative radioiodine scanning and lifelong replacement thyroxine.<sup>1,10,11</sup> Contralateral lymph node metastasis, though rare, is possible and hence it is important to carry out bilateral lymph node sampling of any enlarged lymph nodes during total thyroidectomy.<sup>1,9,10</sup>

The primary lesion in the thyroid gland can vary from 2mm to several millimetres in size and, unless multiple thin histologic sections are examined, the primary lesion can be missed.<sup>1,12,13</sup> Cervical metastasis, however, from a thyroid carcinoma and in patients who present with occult thyroid carcinoma, appears to be independent of the size of the primary thyroid carcinoma.<sup>13</sup> This was the case in our patient who, in spite of significant sized lymph node metastasis, had only a small focus of papillary microcarcinoma of the thyroid gland. To establish a diagnosis of thyroid carcinoma in these small solitary tumours, multiple histological sections of the total thyroidectomy specimen are often necessary so that multicentric lesions can be demonstrated.<sup>8</sup> Although small intraglandular tumour foci and cervical lymph node metastasis were found not to effect the survival rate of patients with thyroid carcinoma, considerably higher recurrence rates are observed in patients who undergo conservative operations.<sup>10,14,15</sup>

In the last 10 years, major improvements and new technologies have been proposed and applied in thyroid surgery. These include minimally invasive thyroidectomy; new devices like ultracision for achieving haemostasis and dissection; regional anaesthesia; intraoperative neuromonitoring of the recurrent laryngeal nerve to avoid its injury; parathyroid hormone assay technology and genetic screening.<sup>16</sup>

## Conclusion

A papillary thyroid carcinoma presenting primarily as a cervical lymphadenopathy is rare. The nature of these lesions is confirmed by a combination of radiological investigation and FNAC. The primary lesions, however, could be as small as a few millimetres in size and difficult to detect preoperatively. If cervical lymphadenopathy is

confirmed to be metastatic thyroid carcinoma, total thyroidectomy and lymph node dissection would be the most appropriate approach. When this is followed up by postoperative radionuclide scanning and a lifelong suppressive dose of thyroxine, a good outcome is most likely.

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