CASE REPORT

Cervical Lymph Node Metastasis of Papillary Thyroid Carcinoma without Identifiable Primary Tumor on Examination: A Case Report†

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Background: Papillary thyroid carcinoma (PTC) is the most common type of thyroid cancer, with cervical lymph node metastases occurring in 20% to 50% of patients, often presenting as a neck mass. Incidental detection of PTC in cervical lymph nodes, without an identifiable primary tumor in the thyroid gland, is rare and can be easily overlooked.

Case Report: The author reported the case of a 25-year-old woman who presented with a left neck mass but no palpable thyroid nodule. Fine needle aspiration revealed atypical cells. Ultrasound showed enlarged lymph nodes with partial necrosis or cystic changes on the left side of the neck, while the thyroid gland appeared normal. A computed tomography (CT) scan confirmed multiple enlarged left cervical nodes, some with necrosis, and normal thyroid glands. A biopsy of the lymph nodes confirmed the diagnosis of thyroid carcinoma. Hematoxylin and eosin staining demonstrated the nuclear features characteristic of PTC, and immunostaining was positive for thyroglobulin and thyroid transcription factor-1. The patient underwent total thyroidectomy and left modified radical neck dissection. Pathological examination revealed a 1.5×0.7×0.5 cm papillary carcinoma in the left lower pole. The surgery and postoperative radioactive iodine treatment were uneventful. After three years, a post-ablation whole-body scan was negative, and anti-thyroglobulin antibodies and thyroglobulin levels were also negative.

Conclusion: The absence of malignant findings in the thyroid during examination complicates the diagnosis of PTC, presenting a significant challenge for clinicians. This case underscores the importance of thorough investigations to prevent missed diagnoses and delays in treatment.

Keywords: Papillary thyroid carcinoma; Lymph node metastasis; Thyroidectomy; Neck dissection

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Papillary thyroid carcinoma (PTC) is the most common type of thyroid cancer that can metastasize to cervical lymph nodes and distant sites. The patients often present with neck mass due to lymph node metastases. The cases of incidental detection of PTC in cervical lymph nodes without identifiable primary tumor in the thyroid gland are rare. It makes diagnosis difficult, which is a diagnostic challenge to clinicians by low prevalence and this phenomenon is not discussed in the American Thyroid Association guidelines[1].

The present case report was approved by the Ethics Committee of Burapha University on March 20, 2024 (IRB1-022/2024).

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Case Report

A 25-year-old woman who presented with a self-detected left neck mass for two months. She presented without a prolonged fever, significant weight loss, chronic cough, dyspnea, palpitation, or night sweat.

Clinical examination revealed a left lateral cervical lymph node of levels IIb, 3 cm in diameter without palpable thyroid nodule. The patient was euthyroid. Fine needle aspiration showed atypical cells suspected of lymphoma or metastatic carcinoma.

Ultrasound of the neck revealed enlarged and prominent nodes with partial necrosis or cystic change at left sided neck measured up to 2.3×1.4 cm, 2.6×1.0 cm, 2.3×1.0 cm at the left upper cervical region, which favored pathologic nodes (Figure 1A). No mass at bilateral thyroid glands were found (Figure 1B). Computerized tomography (CT) scan

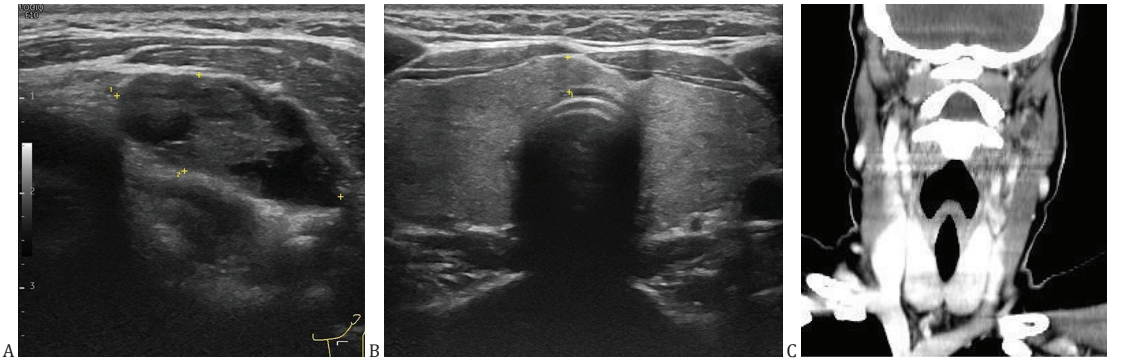

Figure 1. Radiologic finding. (A) Ultrasound of the neck revealed several enlarged and prominent nodes with partial necrosis or cystic change at left sided neck, (B) Ultrasound of the neck revealed no suspicious mass at thyroid gland, (C) Computerized tomography scan revealed multiple enlarged left cervical nodes at level IIb, III, IV with some with necrosis and the included thyroid gland appears normal.

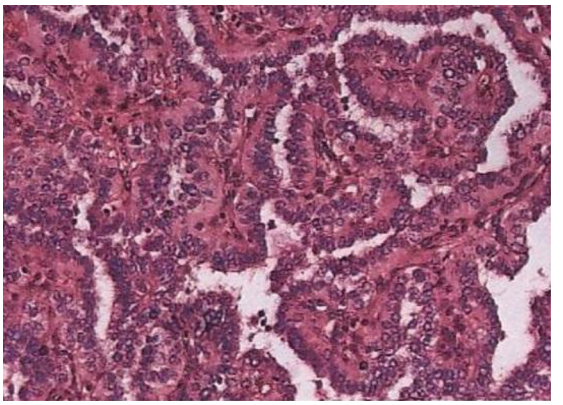

Figure 2. Pathologic finding of left cervical node: Nuclear features of papillary thyroid carcinoma.

revealed multiple enlarged left cervical nodes at level IIb, III, and IV that measured 8 to 12 mm in short axis with necrosis and the included thyroid gland appeared normal (Figure 1C).

Biopsy of lymph nodes showed positive for metastatic carcinoma. Hematoxylin and eosin staining of lymph nodes revealed nuclear features of PTC (Figure 2) and immunostaining was positive for cytokeratin 7 (CK7), CK19, thyroglobulin (TG), and thyroid transcription factor-1 (TTF-1) that led to the diagnosis of thyroid carcinoma. No distant metastasis showed in ultrasound upper abdomen and CT chest.

The authors performed total thyroidectomy with left modified radical neck dissection. Pathology revealed a 1.5×0.7×0.5 cm papillary carcinoma in the left lower pole. Tumor limited in thyroid and no extrathyroidal extension was found. Central node metastasis showed 2 in five lymph nodes and left lateral node metastasis showed 4 in ten lymph nodes. It was difficult to diagnose. The author combined the results of radiographic imaging and immunohistology to diagnose the patients. There was no complication after surgery and postoperative radioactive iodine was compatible with disease remission due to negative post-ablation whole body scan with negative anti-TG antibodies and TG levels.

Discussion

The most common clinical presentation of PTC is a thyroid nodule. Isolated cervical lymph nodes or distant metastasis is rare. The most common palpable cervical lymph nodes are located at the mid jugular for 48%, lower jugular for 29%, posterior triangle for 9%, and upper jugular lymph nodes for 9.7%[2]. Although metastatic cervical lymphadenopathy has been reported as 20% to 50%[3], it is usually rare. Further investigations are necessary to exclude other primary malignancies[4-6].

Monchik et al. described their experience with eight cases of occult thyroid carcinoma presenting as isolated lateral cystic neck nodes. After thyroidectomy, the pathological report showed seven cases of thyroid carcinoma in thyroid gland measured about 2 to 9 mm and one case showed no primary tumor. The present patient also found thyroid cancer approximately 1.5 cm in the thyroid after total thyroidectomy, which should have been found on clinical and radiological examinations because the primary tumor was larger but was not found. It led to a challenging diagnosis in the present patient.

Singh et al. reported a 31-year-old female with left cervical lymphadenopathy with normal thyroid gland. After total thyroidectomy, cervical lymph node metastases were found without carcinoma in

thyroid gland[7], as well as the report of Li et al. that showed a 27-year-old female with non-palpable left thyroid nodule and left cervical lymphadenopathy that was incidentally detected in ultrasound. After left thyroid lobectomy with lymph node dissection, cervical lymph node metastases were found with no primary tumor in the left thyroid gland. The possible hypotheses included tumor regression or ectopic thyroid[8]. Although it was different from the present case, the occult thyroid carcinoma was considered.

The appropriate treatment of patients with PTC presenting with cervical lymphadenopathy is total thyroidectomy with ipsilateral modified radical neck dissection to minimize the risk of local recurrence. The prognosis is good when surgery is followed by radionuclide scanning and TG levels[7,8].

There are limitations in the present case due to the focus on a single patient, which limits generalizability to other cases. Furthermore, no mention of long-term follow-up to assess recurrence or survival outcomes and no reference to the use of molecular genetic testing such as BRAF or RAS for further diagnostic confirmation were done.

Conclusion

The author reported a rare phenomenon of cervical lymph node metastases of PTC without identifiable primary tumor on clinical and radiologic examination. However, radiographic imaging and immunohistology were helpful for diagnosis to avoid missed diagnosis and delayed treatment.

What is already known about this topic?

PTC can metastasize to cervical lymph nodes without identifiable primary tumor in the thyroid gland.

What does this study add?

The radiographic imaging and immunohistology is helpful for the accurate diagnosis of non-identifiable primary tumors of PTC with cervical lymph node metastasis.

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Conflicts of interest

The author declares that there is no conflict of interest regarding the publication of this paper.

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