

# Papillary Thyroid Carcinoma with Tuberculous Cervical Lymphadenopathy Mimicking Metastasis

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## ABSTRACT

**Objective:** To determine the frequency of tuberculous cervical lymphadenopathy mimicking metastasis from papillary thyroid cancer.

**Study Design:** Case series.

**Place and Duration of Study:** Surgical Unit-I, Ward-3 of Jinnah Postgraduate Medical Centre, Karachi, from March 2005 to March 2010.

**Methodology:** All patients above 12 years of age of either gender diagnosed on investigations as papillary thyroid cancer (PTC) were included in the study. Ultrasound and fine needle aspiration cytology (FNAC), neck of solitary thyroid nodules (STN) and cervical lymph nodes were done. Total thyroidectomy and excision biopsy of cervical lymph nodes was performed, histopathological results were recorded and patients were managed accordingly.

**Results:** A total of 55 patients had PTC and 25 had cervical lymphadenopathy. Eighteen patients of PTC with cervical lymphadenopathy were diagnosed after investigations as cases of tuberculous cervical lymphadenopathy (TCL) initially considered as metastasis from PTC; 5 patients had metastasis from PTC. Two patients proved to be of reactive hyperplasia which initially showed tuberculous cervical lymphadenopathy on FNAC. So 80% patients of cervical lymphadenopathy with PTC were due to benign disease and 20% had metastasis in lymph node due to PTC.

**Conclusion:** PTC with cervical lymphadenopathy due to co-existent tuberculosis is common. Metastasis from PTC in lymph nodes were less common than tuberculous lymphadenitis in this study. Tuberculosis should be considered before deciding for neck dissection in cases of PTC.

**Key words:** Papillary thyroid cancer. Cervical lymphadenopathy. Tuberculosis. Metastasis.

## INTRODUCTION

Papillary thyroid cancer (PTC) is the most frequent histological subtype of thyroid cancer accounting for 85% of cases of thyroid tumours.<sup>1</sup> Its incidence has increased over past several decades.<sup>2</sup> PTC spreads into cervical lymph nodes with a frequency of 82% in patients with clinically negative lymph nodes.<sup>3</sup> Local recurrence in cervical lymph nodes has been reported in upto 31% patients.<sup>4</sup> It has been shown that the local recurrence reduced after lymph node dissection but neck dissection carries significant morbidity.<sup>4</sup> Sometimes occult metastasis are present in the cervical lymph nodes.<sup>5</sup>

PTC usually presents as solitary thyroid nodule (STN). It is also found incidentally in cervical lymph nodes associated with squamous cell carcinoma.<sup>5</sup> Tuberculous adenitis is a common cause of lymphadenopathy in endemic areas. The most common location is neck which may mimic metastasis to cervical lymph nodes

from PTC. Tuberculosis, not metastasis, from PTC should be considered in aetiology of enlarged lymph nodes when PTC patients with risk factors for tuberculosis present with cervical lymph node enlargement.<sup>6</sup> A giant cervical lymph node metastasis from thyroid papillary microcarcinoma is also considered as parotid tumour in pre-operative diagnosis.<sup>7</sup> Co-existence of cervical tuberculosis and metastatic squamous cell carcinoma in a single lymph node group has been reported in Dublin.<sup>8</sup> Hodgkin's lymphoma (HL) and tuberculosis co-existing in cervical lymph nodes can also occur.<sup>9</sup>

High resolution cervical ultrasonography is a sensitive method for differentiating between metastatic and benign lymph nodes in patients. Ultrasound has sensitivity and specificity in detecting lateral lymph node metastasis of 97% each but it cannot detect metastasis in the central neck accurately.<sup>3</sup> Additional methods that can compliment ultrasound include fine needle aspiration cytology (FNAC) and polymerase chain reaction (PCR). Diagnostic efficiency of FNAC varies between 46% and 90% and PCR has a sensitivity of 82% and specificity of 100% for detecting tuberculosis. Combined FNAC and PCR for detecting *Mycobacterium tuberculosis* should be employed to differentiate cervical tuberculous lymphadenitis from metastasis.<sup>6</sup>

PTC is multifocal so total or near-total thyroidectomy is also a good option apart from lobectomy and isthmu-

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sectomy. It avoids the risk of re-operation and allows for better monitoring of the treated patients with scintigraphic scan and thyroglobulin measurements to detect persisting or relapsing disease. It also augments the yield of postoperative radioactive iodine therapy.

Central lymph node dissection should be performed at the time of thyroid surgery. Subsequent surgery with node metastasis may be technically difficult. Some investigators have suggested simple excision of involved lymph nodes (berry picking) is generally considered as inappropriate.<sup>9</sup>

Treatment for tuberculous lymphadenitis is anti-tuberculous medication and for metastatic cervical lymph node is neck dissection. Tuberculous cervical lymphadenopathy is common in our setup so the purpose of this study was to determine the frequency of tuberculous cervical lymphadenopathy in patients with PTC.

### METHODOLOGY

This study was conducted in Ward-3, JPMC, Karachi, from March 2005 to March 2010. All patients of STN above 12 years of age were investigated for thyroid carcinoma. Ultrasound neck and FNAC of STN were done. Patients whose FNAC report indicated papillary carcinoma were included in the study. In patients with cervical lymphadenopathy and papillary carcinoma FNAC of cervical lymph nodes was also obtained. All patients were admitted for total thyroidectomy, berry picking of tuberculous lymph nodes and central neck dissection of metastatic lymph nodes was done. Histopathology report of lymph nodes and thyroid specimen were separately received and results were recorded on proforma. PTC patients were sent to Atomic Energy Centre for whole body scanning after one month of surgery and subsequent radiotherapy was given to patients in whom residual thyroid tissue was found.

All information about the patients was recorded on the proforma and data analysed on SPSS version 13.0. Results were described as frequency percentages.

### RESULTS

Fifty five patients of papillary carcinoma thyroid were operated upon after thorough investigations. Twenty five out of 55 (45.5%) patients of PTC also had cervical lymphadenopathy. In all patients, the carcinoma was intracapsular. Eighteen out of 25 (72.0%) patients of cervical lymphadenopathy with PTC were diagnosed on FNAC and histopathology of lymph node as having tuberculosis. Two patients out of 25 (8%) initially diagnosed on FNAC as cases of tuberculous cervical lymphadenopathy were later proved as having reactive hyperplasia on histopathological examination.

Five out of 25 patients (20.0%) of cervical lymphadenopathy proved as metastasis from PTC. In 80% patients

of cervical lymphadenopathy with PTC, the reason was benign disease (Table I). Among the 18 patients who had PTC and tuberculous cervical lymphadenopathy, 14 were female and 4 were male. Age ranged from 15 to 40 years.

So tuberculous cervical lymphadenopathy was more frequent than metastasis in lymph nodes even in the cases of PTC.

**Table I:** Causes of cervical lymphadenopathy with PTC.

Diseases in patients	No. of patients	Percentage
PTC patients with cervical lymphadenopathy	25 out of 55	45.5%
Patients with tuberculosis cervical lymphadenopathy associated with PTC	18 out of 25	72.0%
Patients with metastasis to lymph nodes in PTC	5 out of 25	20.0%
Patients with reactive hyperplasia	2 out of 25	8.0%

### DISCUSSION

PTC is the most common malignant tumour of the thyroid gland especially in areas with adequate or excess iodine in diet. It occurred in thyroiditis. It can co-exist with T-cell lymphoma/leukemia.<sup>10</sup> Association of papillary carcinoma with adenocarcinoma of gastrointestinal tract, larynx cancer and hepatoma is also markedly high.<sup>11</sup> The stomatic mutation described in lymphoid neoplasms including acute T-cell leukemia have been recently found significant in pathogenesis of PTC.<sup>12</sup>

In tuberculous cervical lymphadenopathy the commonest age group affected was 15-20 years; constitutional symptoms were not present in most of the patients as known.<sup>13</sup>

Neck dissection is generally indicated in PTC patients with clinically node positive lateral neck. Although this procedure is reliable and relatively safe, considerable postoperative complications can occur.<sup>14,15</sup> In this study this operation was avoided in most of the patients because of suspected tuberculous lymphadenitis in discrimination of metastatic lymph nodes.

Metastatic lymph nodes were common from squamous cell carcinoma in head and neck and they also showed similar findings as papillary carcinoma on ultrasound of neck and both malignancies can occur simultaneously.<sup>16</sup> In this study association with head and neck malignancy had not been found.

Tuberculous adenitis is very common in Pakistan. Every third patient in head and neck clinic is diagnosed as tuberculous cervical lymphadenopathy. In this study, it was proved that even in PTC the common cause of cervical lymphadenopathy was tuberculosis. So it is recommended that even in PTC or other head and neck malignancies with lymph node enlargement, one should never overlook tuberculosis as co-existent cause of

cervical lymphadenopathy. It is so because the treatment of tuberculous cervical lymphadenopathy is non-invasive but metastasis require neck dissection. So FNAC and PCR should be done for cervical lymphadenopathy and if still in doubt then excision biopsy of the cervical lymph node should be done.

Sentinel lymph node biopsy is indicated in papillary carcinoma if one wishes to avoid neck dissection.<sup>17</sup> Tuberculous lymphadenitis is usually found in the supraclavicular area or posterior triangle of neck and this is also a frequent site for PTC metastasis.<sup>18</sup>

Sonographic findings of tuberculous lymphadenitis are very similar to those of metastatic lymph nodes in PTC. Ultrasound in tuberculous cervical lymphadenopathy showed cystic necrosis and calcifications similar to metastasis from PTC to cervical lymph nodes. Lymphatic metastasis from PTC occurred in stepwise fashion, first to lymph nodes in tracheo-esophageal groove then subsequently into jugular chain including supraclavicular fossa.<sup>19</sup>

Patients with PTC have high rate of regional metastasis with clinically apparent lymph node involvement in 15% to 50% patients,<sup>20</sup> and occult metastasis in 40-90%.<sup>21</sup>

Central neck dissection was in the 5 patients whose FNAC showed papillary carcinoma. Lymph node dissection is generally indicated when there is cervical lymphadenopathy detected either pre-operatively or intraoperatively. Berry picking of lymph node is controversial because it is associated with high incidence of regional recurrence.<sup>22</sup>

## CONCLUSION

In cases of suspected metastatic cervical nodes in pre-operative patients with PTC, tuberculous cervical lymphadenopathy should also be considered in the differentials and thoroughly investigated to avoid neck dissection surgery and to avoid complications. It was proved that tuberculous cervical lymphadenopathy is very common even in PTC.

## REFERENCES

- Schlumberger MJ. Papillary and follicular thyroid cancer. *N Engl J Med* 1998; **5**:293-306.
- Mazzaferri EL. Long-term outcome of patients with differentiated thyroid carcinoma: effect of therapy. *Endocri Pract* 2000; **6**:469-76.
- Roh JL, Park CI. Sentinel lymph node biopsy as guidance for central neck dissection in patients with papillary thyroid carcinoma. *Cancer* 2008; **113**:1527-31.
- Pereira JA, Jimeno J, Miquel J, Iglesias M, Munné A, Sancho JJ, et al. Nodal yield, morbidity and recurrence after central neck dissection for papillary thyroid carcinoma. *Surgery* 2005; **138**:1095-100; discussion 1100-1.
- Yamamoto T, Tatemoto Y, Hibi Y, Ohno A, Osaki T. Thyroid carcinomas found incidentally in the cervical lymph nodes: do

- they arise from heterotopic thyroid tissues? *J Oral Maxillofac Surg* 2008; **66**:2566-76.
- Choi EC, Moon WJ, Lim YC. Tuberculous cervical lymphadenitis mimicking metastatic lymph nodes from papillary thyroid carcinoma. *Br J Radiol* 2009; **82**:208-11.
- Kusunoki T, Murata K. A giant cervical lymph node metastasis from thyroid papillary microcarcinoma considered as a parotid gland tumour in pre-operative diagnosis. *Thyroid* 2004; **14**:1103-4.
- Gheriani H, Hafidh N, Smyth D, O'Dwyer T. Co-existent cervical tuberculosis and metastatic squamous cell carcinoma in a single lymph node group: a diagnostic dilemma. *Ear Nose Throat J* 2006; **85**:397-9.
- Centkowski P, Sawczuk-Chabin J, Prochorec M, Warzocha K. Hodgkin's lymphoma and tuberculosis coexistence in cervical lymph nodes. *Leuk Lymphoma* 2005; **46**:471-5.
- Khadilkar UN, Mathai AM, Chakrapani M, Prasad K. Rare association of papillary carcinoma of thyroid with adult T-cell lymphoma/leukemia. *Indian J Pathol Microbiol* 2010; **53**:125-7.
- Ono K, Shimamoto Y, Suga K, Tokioka T, Sueoka E, Matsuzaki M, et al. Cancer superimposed on adult T-cell leukemia. *Cancer* 1989; **64**:635-40.
- Basolo D, Giannini R, Faviana P, Fontanini G, Patricelli-Malizia A, Ugolini C, et al. Thyroid papillary carcinoma: preliminary evidence for a germ-line single nucleotide polymorphism in the Fas gene. *J Endocrinol* 2004; **182**:479-84.
- Jha BC, Dass A, Nagarkar NM, Gupta R, Singhal S. Cervical tuberculous lymphadenopathy: changing clinical pattern and concepts in management. *Postgrad Med J* 2001; **77**:185-7.
- Shaha AR. Complications of neck dissection for thyroid cancer. *Ann Surg Oncol* 2008; **15**:397-9.
- Cheah WK, Arici C, Ituarte PH, Siperstein AE, Duh QY, Clark OH. Complications of neck dissection for thyroid cancer. *World J Surg* 2002; **26**:1013-6. Epub 2002 Jun 6.
- Ahuja AT, Ying M. Sonographic evaluation of cervical lymph nodes. *Am J Roentgenol* 2005; **184**:1691-9.
- Takami H, Sasaki K, Ikeda Y, Tajima G, Kameyama K. Detection of sentinel lymph nodes in patients with papillary thyroid cancer. *Asian J Surg* 2003; **26**:145-8.
- Appling D, Miller RH. Mycobacterial cervical lymphadenopathy: 1981 update. *Laryngoscope* 1981; **91**:1259.
- Roh JL, Kim JM, Park CL. Lateral cervical lymph node metastasis from papillary thyroid carcinoma: pattern of nodal metastases and optimal strategy for neck dissection. *Ann Surg Oncol* 2008; **15**:1177-82. Epub 2008 Feb 6.
- Shaha AR, Shah JP, Loree TR. Patterns of nodal and distant metastasis based on histological varieties in differentiated carcinoma of the thyroid. *Am J Surg* 1996; **172**:692-4.
- Dzodic R, Markovic I, Inic M, Jokic N, Djuricic I, Zegarac M, et al. Sentinel lymph node biopsy may be used to support the decision to perform modified radical neck dissection in differentiated thyroid carcinoma. *World J Surg* 2006; **30**:841-6.
- Sakorafas GH, Giotakis J, Stafyla V. Papillary thyroid microcarcinoma: a surgical perspective. *Cancer Treat Rev* 2005; **31**:423-38. Epub 2005 Jul 6.

