

Case Report

Total Laryngectomy in Advanced Papillary Thyroid Cancer Infiltrating into Larynx: A Case Report & review of Literature

Ahad Yousaf Molvi, Qandila Ali, Ayesha Pervaiz, Muhammad Paras Naseem, Mubasher Ikram, Rahim Dhanani*

Department of Otorhinolaryngology-Head & Neck Surgery, Dr Ziauddin University & Hospital, Karachi, Pakistan.

Abstract: Among differentiated thyroid cancer (DTC), papillary thyroid cancer (PTC) is the most commonly encountered histological type. Patients with papillary thyroid carcinoma (PTC) show an excellent prognosis. Infiltration of PTC into the larynx is very rare and can worsen the disease prognosis. We are reporting one such rare case in which PTC showed invasion in the larynx causing narrowing of the airway. We performed total thyroidectomy with total laryngectomy and neck dissection.

Keywords: Papillary thyroid carcinoma, Laryngotracheal invasion, Laryngectomy, Thyroidectomy, Prognosis, Esophagus.

INTRODUCTION

Thyroid cancers are the most common endocrine malignancies that present as a slow-growing neck mass in the midline and account for up to 1% to 5% of all cancers throughout the world [1]. Differentiated thyroid cancers (DTC) are usually slow-growing indolent tumors and have a prolong survival [2]. The most commonly encountered histological form among DTC is papillary thyroid carcinoma (PTC) which shows an excellent prognosis [3]. Rarely DTC has shown invasion in the surrounding structures such as the trachea, larynx, and esophagus. Laryngotracheal invasion by DTC is a poor prognostic factor [2, 4, 6]. Here, we are discussing a rare case of a 52 years old gentleman with laryngeal invasion by PTC causing intraluminal narrowing of the airway. As infiltration of PTC into the larynx is very rare and can worsen the disease prognosis this needs to be diagnosed and managed as early as possible to improve the prognosis of the disease.

CASE REPORT

52 years old male with no known comorbid came to our outpatient department with midline neck swelling for past 12 months which was gradually increasing in size. For last 6 months this swelling was associated with dysphagia for solids and dyspnoea especially on lying position. He presented to us when his symptoms aggravated and he developed hoarseness and mild stridor.

On examination it was a firm to hard, non-tender 5 x 4 cm midline neck swelling at the level of thyroid gland more on the right side. It was non mobile and fixed to underlying structures. It was moving on swallowing and extending from midline to the anterior border of Sternocleidomastoid muscle, superiorly to the cricoid cartilage, and inferiorly to one finger

above to suprasternal notch. Palpable neck nodes were present at the right levels II, III, and IV. On fibre optic laryngoscopy there was a bulge seen on the side of the larynx and a mass seen in the supraglottic and glottic regions, causing narrowing of the airway. Vocal cords were not visualized properly due to the mass.

CT neck with contrast was performed which showed 5 x 3.5 cm lobulated enhancing soft tissue density mass. The lesion was at the level of right thyroid cartilage infiltrating into the right-sided glottis causing moderate intraluminal narrowing and supraglottic larynx. Laterally extending to the right parapharyngeal space and strap muscles (Fig. 1). Ultrasound-guided fine needle aspiration cytology (FNAC) was performed and it showed Bethesda category V which is suspicious of PTC.

The decision for surgery was established in the tumor board meeting. Total laryngectomy with total thyroidectomy and bilateral II-IV and central neck dissection was performed. Postoperatively patient remained stable and was discharged home. Final histopathology showed PTC with stage pT4a N1b. Histologically it showed finger-like projections with fibrovascular core with lining nuclear enlargement (Fig. 2). The patient received radioactive iodine ablation (150mci) postoperatively. MRI neck was done after 6 months of iodine ablation which came out disease free. The patient is on regular follow-ups.

DISCUSSION

Thyroid tumors are usually slow growing tumors with indolent course. Most common histological form of DTC is PTC and it has good prognosis. PTC invading in to the larynx is seen very rarely. The literature on laryngeal invasion by PTC and its management is very limited with a few case reports and retrospective single center studies [1, 2, 5-8].

*Address correspondence to this author at the Department of Otorhinolaryngology-Head & Neck Surgery, Dr Ziauddin University & Hospital, Karachi, Pakistan. Email:dr.rahimghanani@gmail.com



Fig. (1). CT Neck with contrast (axial view) showing the mass invading the Larynx.

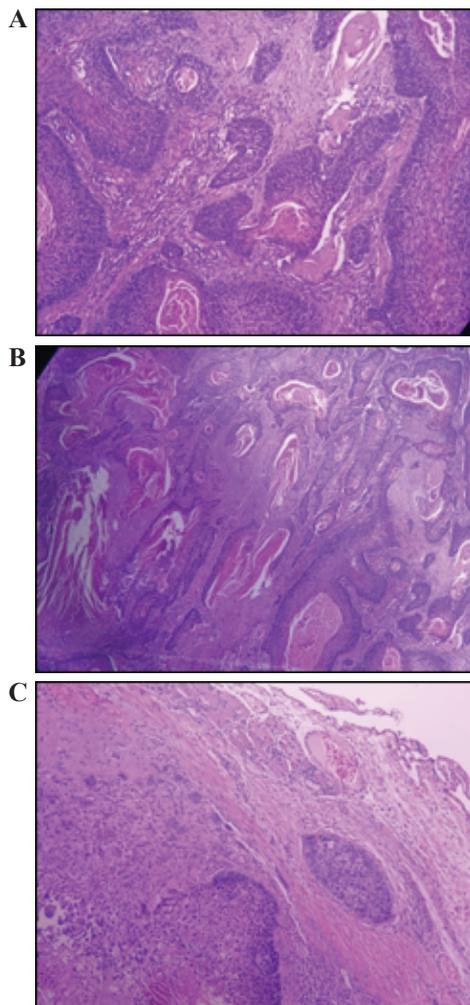


Fig. (2). High power view of PTC (A); (B) low power view of PTC; (c) PTC infiltrating the surrounding muscles.

Anaplastic thyroid carcinoma, due to its very aggressive nature, have shown the invasion of aerodigestive tract and the overall incidence rate of thyroid cancers showing aggressive course of disease and showing invasion of the aerodigestive tract is reported from 1% to 8% in the literature [5, 7]. Intraluminal invasion into the aerodigestive tract is a natural course in case of inadequately managed locally invasive thyroid cancers [9]. Although laryngeal invasion is very rare and usually the invasion is seen more commonly in trachea, hypo pharynx and esophagus [5]. Dralle *et al.*, proposed a classification for invasion of the aerodigestive tract by invasive thyroid tumors, classifying laryngotracheal invasion in six different types and proposing operative management for each type [10]. Total laryngectomy is indicated in patients with thyroid tumors invading into larynx bilaterally or invading vertical segment of trachea of more than 5-6 cm [7].

In the literature, regarding laryngeal invasion by thyroid cancers, three different pathways have been discussed. (A) It can present as a glottic or subglottic lesion anteriorly with tumor invading anteriorly through the cricoid cartilage and cricothyroid membrane; (B) It can present as paralysis of the vocal cords, submucosal lesion or ulceration of the hemilarynx when it invades laterally through the lamina of thyroid cartilage; and (C) enters into the paraglottic space by posteriorly invading from the back of the thyroid cartilage [8].

According to the 8th edition of American Joint Committee on Cancer (AJCC) TNM classification, this case was categorized as T4aN1M0 (stage IVb) and treated accordingly after discussing this case in multidisciplinary tumor board meeting. Total Laryngectomy with total thyroidectomy and right level II, III, IV and central neck dissection was performed. Postoperatively patient received radioactive iodine ablation [11].

PTC invading in the aerodigestive tract is a sign of poor prognosis. However, literature suggests that those patients who underwent laryngectomy as compared to shaving procedures have better survival rates and decreased rates of local relapses with a survival rate of more than 80% that advocates the role of laryngectomy in such cases [4].

Currently, high level evidence and management guidelines for managing PTC with laryngotracheal invasion is missing due to scarce data available in the literature. We recommend multicenter studies with larger sample size to develop management protocols of this condition.

CONCLUSION

Laryngotracheal invasion in patients with PTC is very rare. Aggressive and radical approach like total laryngectomy in such cases helps to achieve complete resection and better outcomes in terms of survival. Further research should be aimed to develop management protocols for this condition.

AUTHORS' CONTRIBUTION

Ahad Yousaf Molvi and Qandila Ali: Literature search, Data collection and drafting.

Ayesha Pervaiz: Literature search.

Muhammad Paras Naseem: Literature search, Final review.

Mubasher Ikram: Final review.

Rahim Dhanani: Concept, Final review.

CONFLICT OF INTEREST

Declared none.

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REFERENCES

- [1] Dhanani R, Faisal M, Akram M, *et al.* Differentiated thyroid carcinoma: Distant metastasis as an unusual sole initial manifestation. Turkish Arch Otorhinolaryngol 2021; 59(3): 188.
- [2] Gupta V, Rao C, Raju K, *et al.* Tracheal/laryngeal infiltration in thyroid cancer: A single-centre experience. Indian J Surg Oncol 2020; 11(1): 75-9.
- [3] Dhanani R, Unar AA, Danish MH, Pasha HA, Tahir U, Ikram M. Synchronous primary diffuse large B-cell lymphoma and papillary 3 thyroid carcinoma: A case report highlighting "Lymphoma first 4 approach" 5. J Pak Med Assoc 2021; 71: 2083-6.
- [4] Chala A, Vélez S, Sanabria A. The role of laryngectomy in locally advanced thyroid carcinoma. Review of 16 cases. Acta Otorhinolaryngol Ital 2018; 38(2): 109.
- [5] Georgiades F, Vasiliou G, Kyrodimos E, Thrasylvoulou G. Extensive laryngeal infiltration from a neglected papillary thyroid carcinoma: A case report. World J Clin Cases 2016; 4(7): 187.
- [6] Parida PK, Herkal K, Preetam C, Pradhan P, Samal DK, Sarkar S. Analysis of pattern of laryngotracheal invasion by papillary thyroid carcinoma and their management: Our experience. Indian J Otolaryngol HeadNeck Surg 2022; 74: 1920-8.
- [7] Brauckhoff M. Classification of aerodigestive tract invasion from thyroid cancer. Langenbecks Arch Surg 2014; 399(2): 209-16.
- [8] Moritani S. Surgical management of cricotracheal invasion by papillary thyroid carcinoma. Ann Surg Oncol 2015; 22(12): 4002-7.
- [9] Perros P, Boelaert K, Colley S, *et al.* Guidelines for the management of thyroid cancer. Clin Endocrinol 2014; 81: 1-122.
- [10] Dralle H, Brauckhoff M, Machens A, Gimm O. Surgical management of advanced thyroid cancer invading the aerodigestive tract. Textbook of Endocrine Surgery. UK: Elsevier 2005; pp. 318-33.
- [11] Lamartina L, Grani G, Arvat E, *et al.* of the AJCC/TNM staging system of thyroid cancer: What to expect (ITCO# 2). Endocr Relat Cancer 2018; 25(3): L7-L11.

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