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Case Report

A rare case report of primary squamous cell carcinoma of the trachea

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ABSTRACT

Primary tracheal tumors are rare in adults and are typically malignant, representing approximately 0.2% of all malignant tumors. The estimated incidence of tracheal cancer is about 0.1 per 1,00,000 people annually. We are presenting a case of 46-year-old woman with chief complaint of midline neck swelling associated with difficulty in breathing at rest. Radiological findings showed focal ill-defined enhancing lesion arising from inferior lobe of thyroid. Bronchoscopy revealed an endotracheal growth partially obstructing the lumen. Biopsy of tissue from intraluminal mass in trachea revealed Moderately differentiated squamous cell carcinoma of trachea. For further evaluation, tracheal resection was performed and sent for histopathological examination confirming our diagnosis of Keratinizing moderately differentiated squamous cell carcinoma and was staged according to Bhattacharya Staging System.

1. Introduction

Primary tracheal tumors are uncommon but usually malignant in adults, representing roughly 0.2% of all malignancies. The incidence rate for tracheal cancers is approximately 0.1 per 1,00,000 people annually.[1] The most common histological type is squamous cell carcinoma, Other histologic types include adenoid cystic carcinoma, small cell carcinoma, large cell carcinoma, sarcoma, adenocarcinoma, and carcinoma not otherwise specified or undifferentiated type. Due to late diagnosis and the challenging nature of surgical intervention, the prognosis for these tumors is generally poor.

2. Case Report

A 46-year-old woman from a lower socioeconomic background presented to the ENT (ear, nose, throat) department with a one-month history of midline neck swelling, progressively increasing in size, associated with difficulty breathing at rest and weight loss. She denied any history of throat pain or voice change. Upon systemic examination, audible wheezing was noted, while other general examination findings were unremarkable.

The diagnostic workup included laryngoscopy, revealing restricted movements of the vocal cords. Imaging with a neck CT showed a focal ill-defined irregular inhomogenously enhancing lesion arising from the inferior right lobe of the thyroid. Bronchoscopy confirmed the presence of an endotracheal growth. Thyroid function tests (TFT) were within normal limits. Histopathological examination of tissue from the intraluminal tracheal mass revealed superficial epithelium consisting of tumor tissue composed of infiltrating nests and strands of neoplastic squamous cells, along with keratin pearl formation, consistent with a diagnosis of moderately differentiated squamous cell carcinoma.

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Following the primary diagnosis, tracheal resection was performed, and the excised tissue was sent for histopathological examination and staging. (Figure 1)

Figure 1: Gross image of Tracheal resection with intraluminal growth

2.1. Gross examination

Specimen labelled as tracheal tissue with growth which was total measuring 7.0 cm x 5.0 cm x 2.8 cm. Thyroid Cartilage is measuring 3.3 cm x 2.7 cm. Intraluminal Growth is measuring 3.3 cm x 2.7 cm x 2.3 cm. The growth is whitish in colour and invades the tracheal lumen, infiltrating surrounding tissues.

Margins: Nearest surgical margin: 4.0 mm from the growth. Second surgical margin: 7.0 mm from the growth.

2.2. Diagnosis: Tracheal growth resection

1. Keratinizing moderately differentiated squamous cell carcinoma, locoregional disease.
2. Tumor cells are infiltrating the thyroid parenchyma and cartilage (T4).(Figure 3)
3. Lymphovascular invasion is present.
4. Perineural invasion is present (Figures 4 and 5)
5. One lymph node shows evidence of metastatic squamous cell carcinoma (N1)
6. Resected surgical margin are free from tumor.
7. Nearest surgical margin is 2 mm away from tumor (near thyroid)
8. Pathological stage: (T4N1) Stage IV (Bhattacharya staging system)

Immunohistochemistry tests were not performed.

3. Discussion

Squamous cell carcinoma is the most common primary malignant tumor of the trachea. The majority arise in adult men (mean age of 65) and preferentially involve the lower third of the trachea. The clinical course is rapid, and the prognosis is poor. The primary treatment is surgical, usually consisting of circumferential resection of the involved segment with end-to-end anastomosis. Radiation therapy is used for advanced cases. Tumor extension into the thyroid gland and lymph vessel invasion are two important unfavourable prognostic factors.[2]

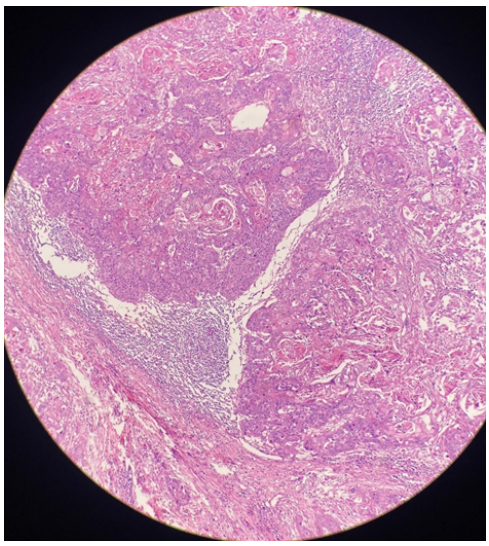

Figure 2: Moderately differentiated squamous cell carcinoma of trachea (H& E, 10x)

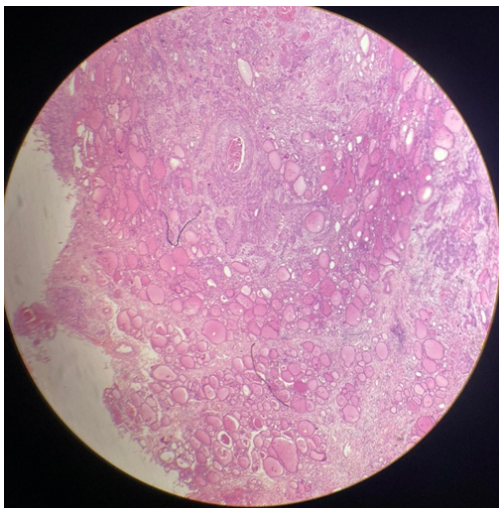

Figure 3: Tumor cells infiltrating thyroid parenchyma (H& E, 10x)

Tracheal cancer can originate from the epithelial cells, mesenchymal structure, or salivary glands. In adults, 90% of tracheal cancers are malignant whereas in children, only 10-30% are malignant.[1,3]

Besides, squamous cell carcinoma, adenoid cystic carcinoma is the second most common type of primary tracheal carcinoma. Other types include mucoepidermoid carcinoma, small cell carcinoma, neuroendocrine carcinoma, adenocarcinoma, large cell carcinoma, sarcomas, fibroma, pleomorphic adenoma, and other

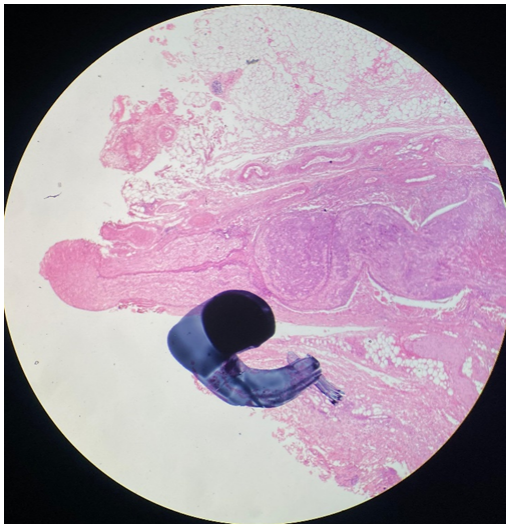

Figure 4: Perineural invasion (H& E, 10x)

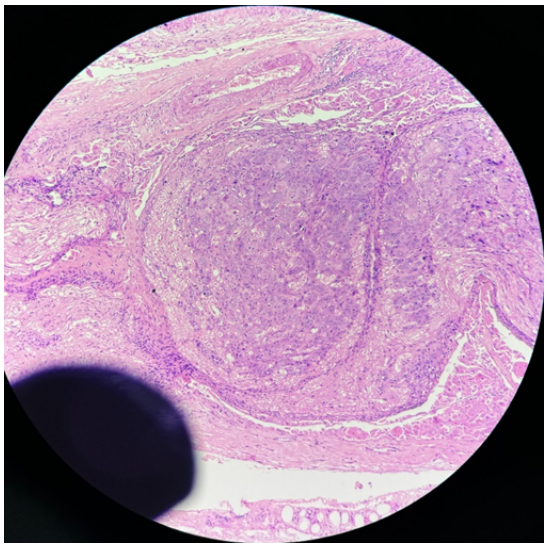

Figure 5: Perineural invasion (H& E, 40x)

rarer forms.At diagnosis, one-third of squamous cell carcinoma cases present with lung and mediastinal metastases. These tumors can be exophytic or ulcerative are characterized by a well-differentiated appearance and keratinization. The 2005 WHO classification describes several variants of SCC including acantholytic carcinoma, adenosquamous carcinoma, basaloid variant, papillary carcinoma, spindle-cell carcinoma, and verrucous variant.[4]

Primary tracheal cancers often present with symptoms of upper airway obstruction such as dyspnea, stridor, and wheezing along with cough and hemoptysis due to mucosal irritation. Invasion of adjacent structures can lead to dysphagia or hoarseness due to recurrent laryngeal nerve palsy.

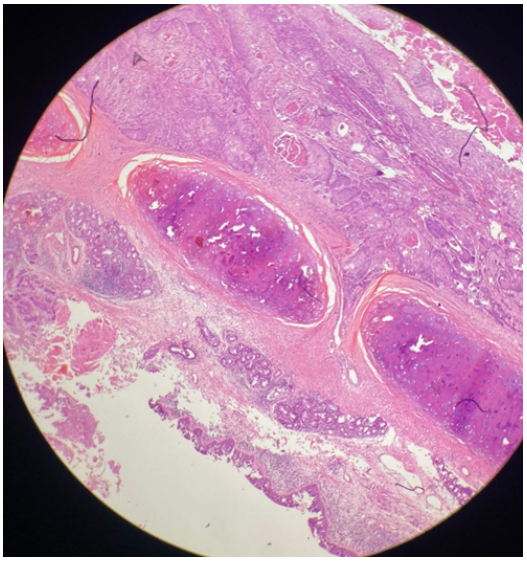

Figure 6: Tumor cells infiltrating cartilage (H& E, 10x)

Initial evaluation includes a chest radiograph which may show a tracheal mass or narrowing is seen in minority of cases at presentation.[5,6] CT scans can reveal polypoid lesions, focal stenosis, or circumferential wall thickening. CT scans or positron emission tomography (PET) scans are also useful for identifying extent of the disease and any distant metastasis, aiding in treatment determination. After the initial evaluation by imaging, bronchoscopy allows for direct visualization of the mass and obtaining tissue biopsy for diagnosis.

Two staging systems for tracheal malignancies have been proposed; one, a cross-sectional analysis of a national cancer database by Bhattacharyya, is based on retrospective tumor–node–metastases (TNM) documentation correlated with survival statistics in 41 squamous cell carcinomas, 19 adenoid cystic carcinomas, and 32 tumors of other histology,[7] although a TNM staging system validated by clinical and pathologic evidence for this disease does not exist. The other, by Macchiarini, is a nonvalidated TNM classification.[8] Both are intended for use with all histologic types of tracheal cancer.

4. Conclusion

Primary tracheal SCC is a challenging diagnosis due to its nonspecific symptoms and rarity. Early detection and prompt surgical intervention are critical for improving outcomes. They typically do not produce symptoms until they have grown large enough to cause an obstruction. Trachea tumors are treatable and curable when diagnosed early. Tracheal tumors are so rare that AJCC classification is still not available.

5. Source of Funding

None.

6. Conflict of Interest

None.

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