





The role of endoscopic ultrasound in the staging of tracheal neoplasm: a brief review

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SUMMARY

Our case report shows the complexity of dealing with tracheal tumors, highlighting the importance of the method used for staging. In this report, endoscopic ultrasound (EUS) was crucial to identify the involvement of the esophageal muscular propria in a tracheal tumor and change the surgical planning of the case.

Staging this kind of tumor represents a challenge for physicians. There is no evidence in the literature on which methods represent the gold standard for T staging.

KEYWORDS: *Tracheal Neoplasms. Neoplasm Staging. Endosonography.*

CASE

A 66-year-old male patient, a former alcoholic and smoker, and with a hypopharyngeal neoplasia's history (T4aN2bM0) was treated in 2006 with radio and chemotherapy.

He remained asymptomatic since the treatment, only under surveillance. He presented an actinic lesion in the larynx indicated by laryngoscopy. One year ago, in a routine bronchoscopy examination, a tracheal lesion in the posterior wall appeared 3cm distally from the vocal folds and measuring 1cm.

Endoscopy showed no evidence of infiltration in the esophagus wall and CT with no distant metastasis. The histopathological analysis revealed that it was a keratinizing, low differentiated and invasive squamous cell carcinoma, considered a second primary tumor. In PET CT there was anomalous concentration only at the interface of the posterior wall of the trachea with the cervical esophagus.

The patient missed follow-up and returned to re-staging in April 2018, still with no complaints. An-

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other bronchoscopy showed 1 cm of lesion growth. This recent CT scan, likewise, showed no signs of lymph node metastasis or distant metastasis.

Firstly, through bronchoscopy, it was possible to measure the distance from the tracheal lesion to the upper dental arch. The transbronchial ultrasound (EBUS) was inserted into the trachea, and the posterior wall of this organ was identified, distorting the architecture, but apparently preserving the esophagus muscularis propria (FIGURE 1).

Subsequently, the same device (EBUS) was inserted into the proximal esophagus up to the distance of the dental arch previously measured through bronchoscopy. Through this positioning, it was possible to identify the contact of the tracheal lesion on the anterior wall of the esophagus, with an invasion of the esophagegic muscularis propria (FIGURE 2).

This finding was crucial in surgical management, which included a more extensive procedure, with partial esophagectomy, in addition to segmental resection of the trachea. However, the patient refused the proposed treatment and opted for exclusive radiochemotherapy.

DISCUSSION

Primary tracheal tumors are a rare type of malignant neoplasm with an incidence of 0.1 per 10,000 people per year, and more than half of them are squamous cell carcinoma. This type of neoplasia may start as an intraluminal nodule and progress to a mediastinal invasion, lymph node metastasis, or even to stenosis or tracheoesophageal fistula¹⁻⁴.

While the most common clinical presentation of this type of tumor is the presence of a tracheal mass, these symptoms often do not appear until at least 50% of the lumen diameter grows. Symptoms vary according to the location of the tumor, as well as its histological type, and may vary from hemoptoic spasms, dysphagia and hoarseness, to wheezing⁵⁻⁷.

In the staging of this type of tumor, multislice CT with reconstruction is now considered the best imaging method to detect tracheal lesions in the main bronchi. It is capable of revealing polypoid lesions, focal stenoses, or thickening of the organ wall. Positron emission tomography (PET / CT) may be useful in the staging of tracheal cancer, particularly in cases of squamous cell carcinoma, helping to access the entire extent of the disease and its resectability.^{7,8}

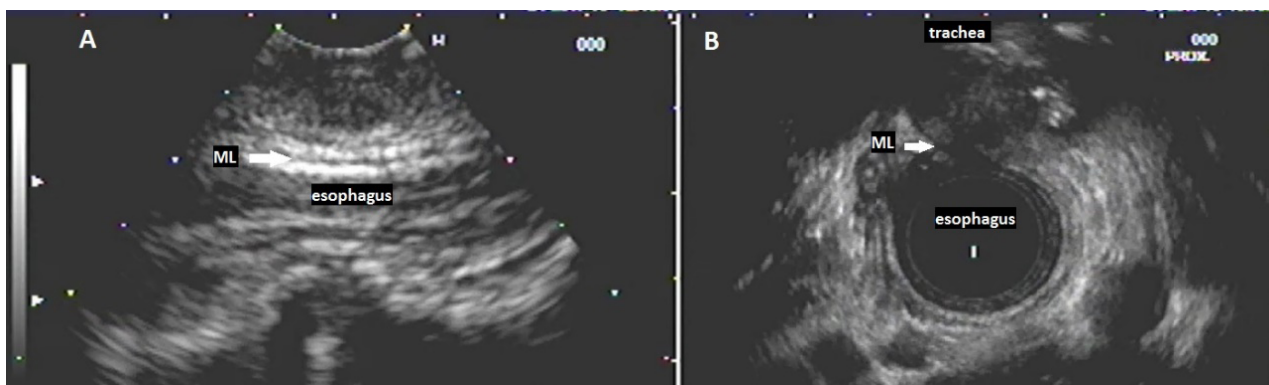


FIGURE 1: CT SCAN OF THE PATIENT WITH ARROWS INDICATING TUMOR LESION.

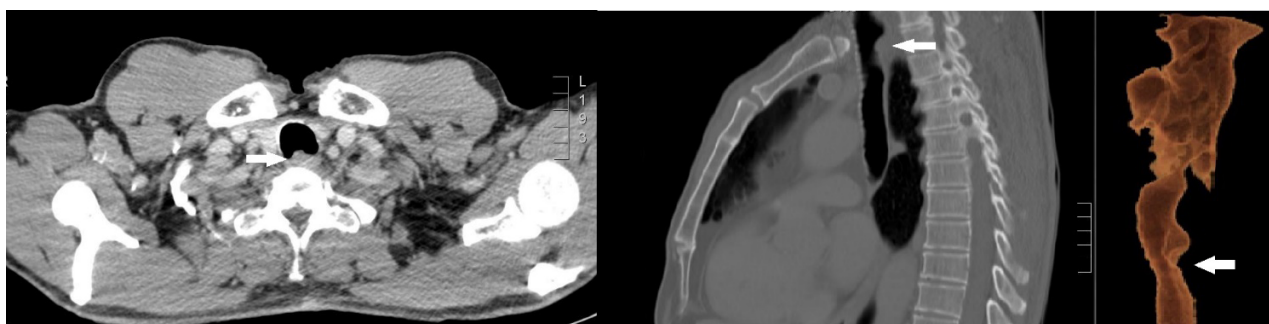


FIGURE 2: A: (EBUS IMAGE): TRACHEAL LESION AND MUSCULAR LAYER OF THE ESOPHAGUS (ML), WITHOUT INVASION CERTAINTY. B: (EUS IMAGE) TRACHEAL LESION SHOWING THE INVOLVEMENT OF THE MUSCULAR LAYER OF THE ESOPHAGUS (ML).

Some modalities are still considered minimally invasive in the diagnosis and staging of airway neoplasms. These include bronchoscopy, endobronchial ultrasound associated with a transbronchial puncture (EBUS-TBNA), transthoracic puncture (TTNA), and transesophageal echoendoscopy (EUS). In general, these procedures present a low risk of complications, but individual studies of sedation tolerance and potential clinical repercussions are still needed⁹.

According to literature, it is currently unclear what would be the best method for the loco-regional staging of primary tracheal neoplasia. It is not known whether EBUS or EUS would be the best method to define the T staging of the tracheal neoplasia of its membranous wall. According to some papers, EUS and EBUS would be complementary methods, improving accuracy in the diagnosis of mediastinal lesions¹⁰. No references were found in the literature that addressed the diagnosis of tracheal neoplasia by EBUS and EUS. Perhaps this is due to the rarity of this type of neoplasia and

the consequent scanty studies in the area.

From our experience, EBUS may not be the best test for tracheal cancer staging when located in the membranous wall (posterior), since, in this case, it was not able to show evidence of esophageal involvement. EUS, however, was able to point to the tracheal lesion clearly invading the anterior esophageal wall, with the involvement of the deepest organ (adventitious and muscular propria).

Perhaps the best form of staging for this type of tumor is through a radial device, which fills the esophageal lumen with the equipment itself. It improves acoustic coupling by reducing virtual space. However, more studies that establish the best diagnostic method to be used in this type of rare neoplasia are still needed in the area.

In this case, the finding of esophageal mucosal involvement was fundamental to modify the patient's behavior, opting for a broader surgical approach, with partial esophagectomy associated with segmental resection of the trachea.

RESUMO

Neste relato de caso mostramos a complexidade em lidar com tumores traqueais, destacando a importância do método usado para estadiamento. Neste relato, a ecoendoscopia (EUS) foi fundamental para identificar o envolvimento da camada muscular própria esofágica por um tumor traqueal e alterar o planejamento cirúrgico do caso. O estadiamento desse tipo de tumor representa um desafio para os médicos. Não há evidências na literatura sobre quais métodos representam o padrão ouro para o estadiamento T.

PALAVRAS-CHAVE: Neoplasias da traqueia. Estadiamento de neoplasias. Endossonografia.

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