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Clinical case

The non-recurrent laryngeal nerve: An anatomical "trap"

Sofia Guerreiro*, Marta Lamas, Henrique Candeias, Rosário Eusébio, Vítor Rocha

Department of General Surgery, Hospital de S. Bernardo, Centro Hospitalar de Setúbal, E.P.E.,, Setúbal, Portugal

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ABSTRACT

The non-recurrent inferior laryngeal nerve (NRILN) is a rare anatomic variation associated with subclavian artery abnormalities. In these cases lack of information about this situation increases the risk of iatrogenic damage of the nerve.

This article describes the incidental pre-operative identification of vascular anomaly and therefore the anticipation of the anatomical variant of right RLN in relation to a clinical case.

Nervo laríngeo não recorrente: uma "armadilha" anatómica

Palavras-chave:
Nervo laríngeo inferior não recorrente
Artéria lusória
Disfagia lusória

RESUMO

O nervo laríngeo inferior não-recorrente (NLINR) é uma variação anatómica rara associada a anomalias da artéria subclávia. Nestes casos, o risco cirúrgico de lesão do nervo aumenta.

Neste artigo é descrita a identificação incidental da anomalia vascular pre-operatoria e por isso antecipada a alteração anatómica do NLR direito a propósito de um caso clínico.

Introduction

The inferior laryngeal nerve (ILN) innervates the intrinsic muscles of the larynx except the cricothyroid. It is also responsible for sensitive supply of the laryngeal region, below the vocal cords. The designation of recurrent is due to its anatomic location, since it is a loop of the vagus nerve, recurring inferiorly to the subclavian artery in the right side and the aortic arch in the left side.[1] Being an essential structure to laryngeal functions and given the intimate relation with the thyroid gland, ILN identification and preservation are fundamental steps in thyroid surgery.

The NRILN is an anatomic variation first reported by Stedman in 1823.[2] Its intraoperative identification and preservation can be a challenge even for the most experienced endocrine surgeon. Thus, the possibility of a preoperative diagnosis reduces the risk of inadvertent damage of the nerve.

The non-recurrent ILN is consistently related to the absence of brachiocephalic trunk and the presence of the so-called *arteria lusoria* on the right side. It only appears on the left side if associated with *situs inversus*. The preoperative identification of this variation if made should serve as a guidance/keynote to the presence of a NRILN.

Case report

We herein present a case report of a 64-year-old male patient, without relevant associated pathologies, which was referred to an endocrine surgery evaluation with the diagnosis of a right thyroid lobe nodule that has been growing for 6 months. The patient denied other symptoms including dysphagia or hoarseness.

Physical examination detected a swelling at the base of the neck, on the right side, solid in consistency, movable with swallowing, without thrill, with 3 cm diameter and with no palpable adenopathy.

Thyroid ultrasound was performed showing a nodular heterogeneous conglomerate with a cystic component, without

* Corresponding author.
E-mail address: sofiacuco@gmail.com (S. Guerreiro).

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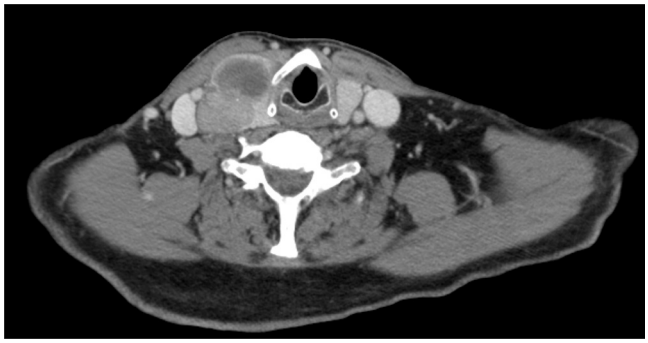

Fig. 1. Neck CT scan revealed enlargement of thyroid right lobe by three expansive solid lesions.

microcalcifications or plunging component at the base of the right lobe, measuring 37.6 mm × 27.0 mm × 40 mm. Left lobe had micronodules.

A fine-needle aspiration cytology ultrasound guided was carried out, and revealed: scarce and disperse colloid; abundant cellularity with isolated thyroid epithelial cells and clusters of variable volume and cohesion. The majority of these cells had cytoplasmic oxyphilic transformation. These aspects were compatible with Hürthle cell tumor.

A CT scan of the neck without contrast, performed prior to consultation and requested by the patient's family doctor revealed enlargement of the right thyroid lobe by three expansive solid lesions (Fig. 1). The lesions were measured between 2.7 and 4 cm. This volume increase of the right lobe exercised extrinsic compression and lateral displacement of the internal jugular vein, without clear invasive criteria and a slight casting on the tracheal right wall at the level of the thoracic operculum (Fig. 2).

A congenital vascular abnormality with the right subclavian artery passing from left to right behind the esophagus (*arteria lusoria*) was identified (Figs. 3 and 4).

The CT evaluation led to the preoperative suspicion of NRILN diagnosis in the right and total thyroidectomy was proposed. CT of the neck is not routinely performed as part of the preoperational evaluation in patients with thyroid disease unless a thoracic component is suspected.

Preoperative vocal cord mobility was not assessed in this patient.

During surgery the anatomic vascular variant reported in CT was identified and the prediction taken from previous data was confirmed: the right ILN was not recurrent. It had its origin from the right vagus nerve in an almost straight angle toward the larynx

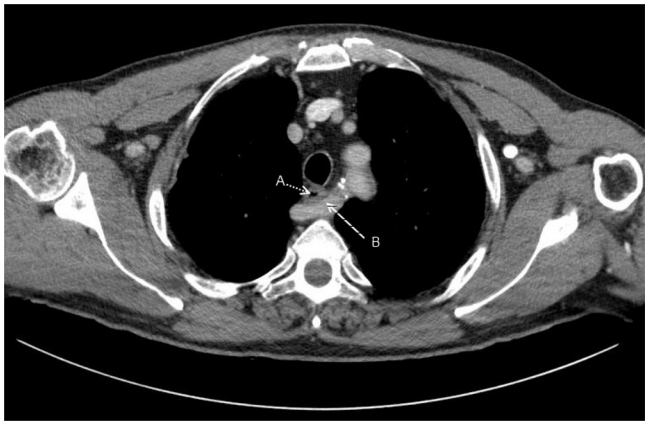

Fig. 2. Neck CT scan. (A) Esophagus and (B) *arteria lusoria*.

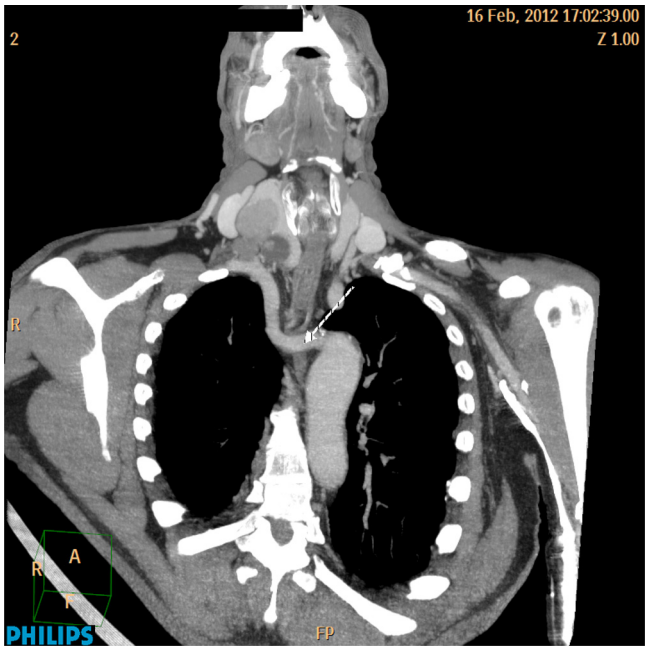

Fig. 3. Neck CT scan: right subclavian artery is positioned near the left subclavian artery and crosses the mediastinum with retroesophageal path – *arteria lusoria.*

(Fig. 5), not exhibiting the usual recurrent pattern in the tracheoesophageal groove. The left ILN featured a normal position.

Surgery and postoperative period did not have intercurrences or complications.

The surgical specimen anatomical pathology identified follicular variant of papillary carcinoma without extra thyroidal extension or vascular invasion: pT3NXMX. Remaining parenchyma had nodular hyperplasia. The patient did I 131 therapeutic in postoperative period.

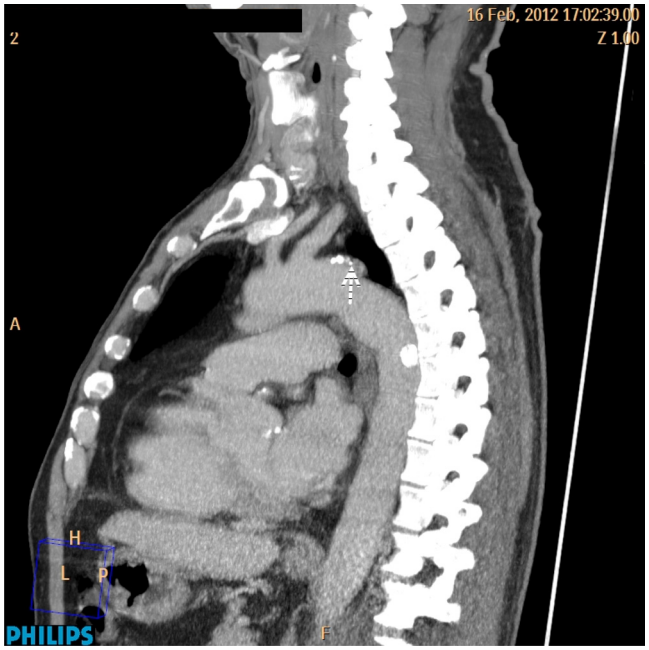

Fig. 4. Neck CT scan. Origin of *arteria lusoria* (arrow).