Vocal cord paralysis: how to recognize, how to diagnose, and what should be focused upon by imaging methods

Paralisia das pregas vocais: como reconhecer, como fazer e o que procurar aos métodos de imagem?

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The exact incidence of vocal cord paralysis is unknown, but it seems to increase with age. The most common clinical findings include persistent hoarseness, dysphonia, and liquid aspiration. However, the presence of normal voice does not rule out the diagnosis and, in up to 35% of the cases, there are no symptoms. Therefore, this allows us to add the condition, side by side with adrenal, renal and thyroid nodules, for example, to the list of new incidentalomas that grow day by day in the routine of the radiologist.

The "tsunami" of incidentalomas is principally due to the modern technological imaging arsenal available, with larger areas of the body being studied, in a faster and more accurate way, moreover with the advent of multidetector computed tomography (CT) scanners. The increase in detection of these "extra" findings, that elongate the radiologists' observations at the end of their reports, implies the need of knowing the laryngeal anatomy and the typical radiological signs of vocal cord paralysis, even in asymptomatic patients. Enlargement of the piriform sinus, associated with thickening and anteromedial displacement of the ipsilateral aryepiglottic fold, are primary indicators of paralysis and can be easily recognized if little attention is dedicated to the region.

The article in this issue of **Radiologia Brasileira** "Imaging evaluation of vocal cord paralysis"[1] is valuable for its robust review of the vagus nerve and its branches. The main role of the radiologist dealing with a patient with known vocal cord paralysis is to detect or exclude innumerable and different lesions that may compress or damage these nervous structures along their whole pathway. The authors dutifully remind us of the need for previous laryngoscopic data for the diagnosis of eventual primary malignant laryngeal tumors, as the imaging methods in general, are not appropriate for such purpose.

In order to cover all etiological possibilities, moreover when the history is not available or trustworthy, the axial acquisition is recommended from the base of the skull to the aortic-pulmonary window. According to the literature, the axial plane is generally sufficient for the diagnosis[2]. Most commonly, CT is the method of choice in the evaluation of recurrent laryngeal nerves dysfunction. The protocol usually includes images under normal breathing conditions and with breath-hold, for analysis of vocal cords movement. Magnetic resonance imaging (MRI) is usually requested in the suspicion of multiple cranial neuropathies for patients with signs of intracranial diseases, skull base or proximal vagal diseases. CT angiography or MRI angiography may be necessary for the diagnosis of carotid dissection as cause of the paralysis[3,4]. New methods, such as FDG PET/CT, have been utilized in cases of direct invasion by the tumor, or paralysis secondary to therapy[5].

In the article published in this issue[1], the authors expose to readers, in a practical and reproducible manner, the protocols of CT and MRI studies utilized in their institution. They highlight the possible use, in selected cases, of the phonation maneuver, with vocalization of the letter *i*[6], without forgetting the increase in the exposure to radiation and examination time. Volume rendering techniques, besides usual multiplanar reconstruction, may also elegantly demonstrate laryngeal complex alterations[3].

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Regardless the investigation effort, in up to 50% of patients, lesions responsible for the alterations are never found. In such cases, considered as idiopathic, toxic or infectious, unilateral acute paralysis is typically self-limited, with 80% of the cases or more showing spontaneous resolution in approximately six months. The treatment is basically conservative, including voice therapy. In specific cases, one may proceed to thyroplasty, vocal cord rehabilitation with injection of materials such as autologous fat or Teflon, arytenoid adduction, among others[3].

After reading the article, the reader will have the anatomical and technical data in mind for an appropriate imaging evaluation of the patient with vocal cord paralysis. In spite of the high number of idiopathic cases or the variety of possible causative lesions, three basic questions should be asked before the study is performed: Is there a history of recent trauma or surgical manipulation? Use of tobacco or alcohol? Signs of other cranial neuropathies? These questions will help the radiologist in the diagnostic investigation.

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