



## Investigating the hoarse voice

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## Hoarseness

- Excessive voice use, laryngitis, or other self limiting conditions.
- Referral to ENT and imaging investigations
  - Longer than three weeks
  - unexplained shortness of breath, stridor, dysphagia, haemoptysis, a neck lump, or lower cranial nerve palsies

## Clinical Examination

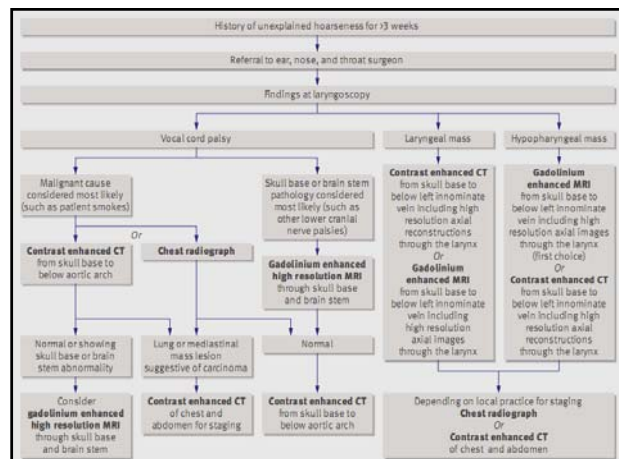
- Indirect laryngoscopy (with a mirror) or flexible nasolaryngoscopy
  - neuromuscular (including vocal cord) paralysis (29%)
  - structural or neoplastic lesions (16%)
  - muscle tension imbalance or functional dysphonia (49%)
  - inflammatory or infectious conditions

## Vocal Cord Paralysis

- Innervation by the recurrent laryngeal branch of vagus nerve
  - surgical trauma (22%),
  - malignancies (predominantly lung and thyroid carcinoma) (22%),
  - inflammatory or infectious causes (36%),
  - neurological disorders (4%),
  - idiopathic (16%)
- Imaging is not usually required when surgery to the appropriate side of the neck or to the mediastinum in left sided vocal cord paralysis

## A Mass Lesion

- The most appropriate imaging investigation depends on the clinical scenario including the patient's age.
- Chest radiography
- Computed tomography
- Magnetic resonance imaging



## Chest Radiography

- tumours of the lung infiltrating the left upper mediastinum or, less often, the right superior chest wall
- useful first investigation in an adult smoker with spontaneous unilateral recurrent laryngeal nerve palsy, particularly if it is left sided
- Followed by a CT scan from the skull base to below the aortic arch

## Computed Tomography

- A CT scan **from the skull base to below the aortic arch** is the investigation of choice in adults with vocal cord paralysis
- For staging head and neck malignancies, the scan should cover the anatomy from the skull base to at least the level of the left innominate vein to ensure that all the relevant lymph node groups can be evaluated.

## Computed Tomography

- I.v contrast helps in the characterisation of mass lesions and distinguish normal **vascular structures** from pathology
- imaging of the chest and liver for staging purposes can be added
- recognition of vascular causes of recurrent laryngeal nerve palsy
- CT scans of the neck in children resulted in absorbed radiation doses to the thyroid of between 15.2 and 52.0 mGy- increase the incidence of **thyroid malignancy** to 390 per million patients

## MRI

- the investigation of choice in where the cause is likely to be in the **skull base or brain stem**
- also preferred to CT when laryngoscopy has shown a hypopharyngeal mass
- movement due to swallowing remains a problem
- Detecting invasion of the laryngeal cartilage is an important aspect of the local staging of laryngeal neoplasms.
  - MRI had a higher sensitivity than CT in this regard (89% v 66%), but its specificity was lower (84% v 94%)

## MRI

- more sensitive in showing the presence and extent of bone marrow infiltration in the skull base by malignant tumours such as NPC.
- In children, MRI avoid ionising radiation.
- lower cranial nerve palsies in addition to a vagal palsy, the causative lesion is likely to be in the skull base- MRI with gadolinium enhanced images
- **Bilateral** vagal nerve palsies are usually caused by **thyroid surgery**, but if they develop spontaneously an MRI scan of the brain is indicated to **exclude brain stem pathology**.

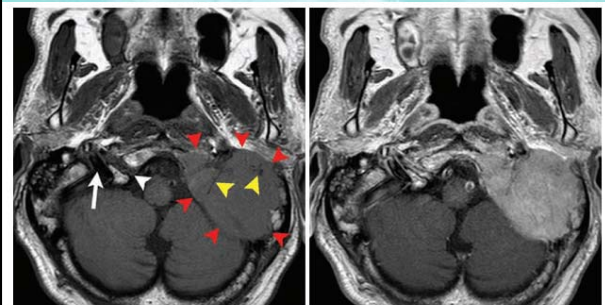
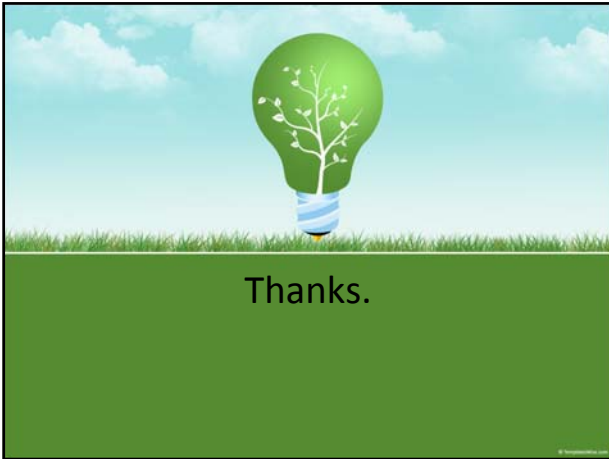


Fig 2 | An axial, unenhanced, T1-weighted image of the skull base (left) shows a large soft tissue mass (red arrowheads) within the left temporal bone and left side of the clivus. Flow voids (yellow arrowheads) within the tumour confirm the vascular nature of the lesion. Note the normal location and appearance of the right jugular foramen (white arrow) and hypoglossal canal (white arrowhead). An axial, gadolinium enhanced, T1-weighted image at the same level (right) shows avid contrast enhancement



Thanks.