

## COMPUTED TOMOGRAPHY HAS LOW YIELD IN THE EVALUATION OF IDIOPATHIC UNILATERAL TRUE VOCAL FOLD PARESIS

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## INTRODUCTION

- For a long time, VF paresis has been considered an incomplete VF paralysis, therefore its study and management have been extrapolations of existing knowledge in VF paralysis.
- Its incidence and assessment are still debated.

## INTRODUCTION

- VF PARESIS DEFINITION
- Decreased mobility of the VF in varying degrees, secondary to partial loss of function of the recurrent laryngeal nerve.

## VF PARESIS

- Initial chief complaints
  - Hoarseness
  - Breathy voice
  - Vocal fatigue
  - Increased phonatory effort
  - Reduced vocal projection
  - Breathlessness during voicing
  - In singers: loss of range and vocal upper register

## VF PARESIS

- CLINICAL HISTORY
- Most patients can recall when their problem began with some precision
  - Usually sudden onset of dysphonia, but you can also have:
    - gradually onset of dysphonia, or
    - episodic recurrent dysphonia (1/3 each, Simpson, et al. Journal of Voice, Vol. 23, No. 3, 2009)
- Patients typically present with symptoms of glottal insufficiency

## VF PARESIS

- PHYSICAL EXAM
- Head and Neck exam with particular attention to:
  - Cranial nerves
  - Neck masses and thyroid gland
- Neurologic screening exam

## VF PARESIS

- ASSESSMENT
- Laryngeal Videostroboscopy
  - Distal chip flexible laryngoscope
  - 70° Rigid laryngoscope
- Laryngeal Electromyography
  - Only if you are not sure about the diagnosis, or the paretic side, and sometimes if you have a question about the prognosis of the paresis.

## VF PARESIS

- LARYNGEAL EXAMINATION
  - “/i/-sniff” maneuver to observe full adduction and abduction of the vocal folds
  - “Unloading technique” (Koufman J. In Diagnosis and Treatment of Voice Disorders 1995:122-134.)
  - Repetitive Phonatory Tasks (Rubin et al. Journal of Voice, Vol. 19, No. 4, 2005)
- Usually secondary supraglottic hyperfunction

## VF PARESIS

- VIDEOSTROBOSCOPY CHARACTERISTICS Video of VF paresis
  - Vocal fold hypomobility
  - Asymmetry in vocal fold movement, some times very subtle (Abduction/adduction)
  - Incomplete glottal closure
  - Vocal fold bowing
  - Increased vibratory amplitude on the affected side
  - Phase asymmetry (chasing phase)

## VF PARESIS

- When signs of vocal fold hypomobility on laryngeal exam were observed, LEMG revealed evidence of neuropathy in 86% (Heman-Ackah et al. Journal of Voice, Vol. 20, No. 2, 2006)
- The videostroboscopic finding of vibratory asymmetry in mobile vocal folds is a reliable predictor of VF paresis in most cases (83%) (Simpson et al. Annals of Otolaryngology, Rhinology & Laryngology 2011; 120(4):239-242).

## ETIOLOGY OF VF PARESIS

	Koufman et al. 2000 (50 patients)	Heman-Ackah et al. 2006 (19 patients)
Idiopathic	68%	42%
Intubation	14%	---
Malignancy	6%	---
Thyroidectomy	4%	---
Esclerosis Multiple Postchemotherapy	4%	---
neuropathy	2%	---
Carotid endarterectomy	2%	---
Goiter/Thyroiditis	---	37%
Trauma	---	16%
Lyme disease	---	5%

Koufman et al. [Otolaryngol Head Neck Surg](#). 2000 Apr;122(4):537-41  
Heman-Ackah et al. [Journal of Voice](#), Vol. 20, No. 2, 2006

## INTRODUCTION

- Although the yield of routine CT imaging in idiopathic vocal fold paralysis has been studied, its role in vocal fold paresis is unknown
- Terris et al., 1992 (36 idiopathic VF paralysis) 54% yield for CXR and 35% yield for CT
- Ramadan et al., 1998 (36 idiopathic Vf paralysis) 55% yield for neck CT, 62% yield for chest CT

Terris et al. [Otolaryngol Head Neck Surg](#) 1992;107:84-90  
Ramadan et al. [Otolaryngol Head Neck Surg](#) 1998;118:199-202

## OBJECTIVES

- To determine the clinical yield of neck and chest CT to diagnose occult neck and mediastinal pathology, in the initial assessment of patients with idiopathic unilateral true vocal fold paresis (IUVFP).

## METHODS

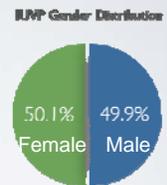
- Retrospective chart review
  - including history, physical exam, neck and chest CT and follow up.
- 8 years period (2003 - 2010)
- We included all consecutive adult patients diagnosed with IUVFP in our tertiary-care voice center
- Institutional Review Board approval was obtained from our institution before the study period

## METHODS

- The diagnosis was made according to:
  - Symptoms of glottal insufficiency
  - Videostroboscopic findings
- Main Outcome:
  - The prevalence of any neck or chest pathology that may explain a partial loss of function of the recurrent laryngeal nerve (RLN)

## RESULTS

- There were 176 patients with unilateral vocal fold paresis
  - 81 subjects had Idiopathic UVFP
  - Mean age: 56.6 years, SD=16.4

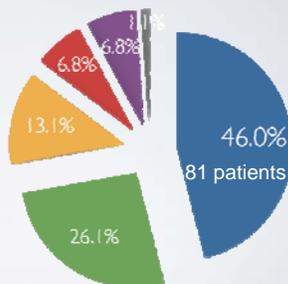


## RESULTS

### Etiology Unilateral VF paresis (176 patients)

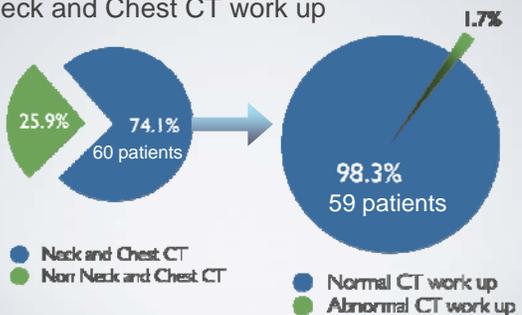
- Idiopathic
- Post surgery
- Post intubation
- CNS pathology
- Miscellaneous
- Malignancy

Post Surgery	
Thyroidectomy	10.8%
Spinal Surgery	6.3%
Cardiothoracic surgery	4.5%
Carotid surgery	2.8%
Parathyroidectomy	1.1%
Zenker's divert. surgery	0.6%



## RESULTS

### Neck and Chest CT work up



## RESULTS

- Only one patient's CT work up revealed a single 1cm mediastinal lymphadenopathy what shows an initial 1.7% yield
- However,
  - PET-CT was negative
  - Cardiothoracic surgery evaluation decided only follow up
- So finally the CT work up had 0% yield

## RESULTS

- In the non CT group (21 subjects), there were no clinical manifestations of occult neck or mediastinal pathology after a mean medical follow up period of 20.1 months (range: 0-87 months).

## DISCUSSION

- The VF paresis etiologies in this retrospective serie are similar to those reported in the literature.
- The most common etiology after idiopathic (46%) was the post surgical group 26.1%,
- The third and fourth were Post intubation 13.1% and CNS pathology 6.8%
- Our retrospective serie is the biggest reported until now about the etiology of VF paresis.

## DISCUSSION

- The role of a radiographic assessment in the evaluation of idiopathic vocal fold paralysis is well established among the ENTs, despite the evidence for this is level IV (Merati et al. [Laryngoscope](#). 2006 Sep;116(9):1539-52)
- Our retrospective review is the first to question the role of imaging studies in the initial assessment of IUVP

## DISCUSSION

- In all patients who underwent CT work up, the information obtained from the neck and chest CT did not change their ultimate management

## CONCLUSIONS

- Our results suggest:
  - CT workup has a very low yield for occult neck and mediastinal pathology in the evaluation of patients with IUVP
  - Chest and neck CT may not be clinically beneficial provided the patient has good otolaryngologic and medical follow-up
  - Prospective studies are needed in order to confirm this idea

Thanks a lot!