

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

Badia PI, Hillel AT, Shah MD, Johns MM, Klein AM

Emory Voice Center

Department of Otolaryngology-Head and Neck Surgery  
Emory University

## 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 Otology, 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

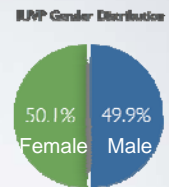
- Retrospective chart review
  - including history, physical exam, neck and chest CT and follow up.
- 8 years period (2003 - 2010)
- We included all consecutive adult patients diagnosed with IUVFP in our tertiary-care voice center
- Institutional Review Board approval was obtained from our institution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

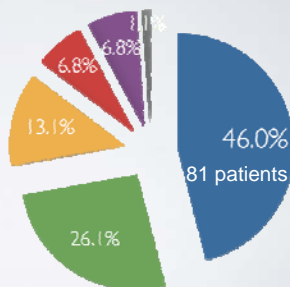


## RESULTS

### Etiology Unilateral VF paresis (176 patients)

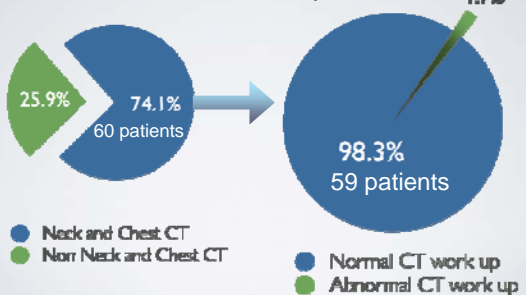
- Idiopathic
- Post surgery
- Post intubation
- CNS pathology
- Miscellaneous
- Malignancy

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!