

: CT 가¹

. 2 . 2 . 2 . 2 . 3 . 3 . .

: CT 가 CT

41 (aorticopulmonary window) CT . CT , : CT 41 20 (49%) , 10 , 6 , 2 , 1 , 1 , 13 (65%) , 가 15 (75%) . CT :

(vocal cord paralysis)

, ,

(1-4).

1996 11 1998 2

Tomography, CT) Resonance Imaging, MR)

(Computed (Magnetic

CT

가 ,

. CT

41 가 , CT

가 MR ,

CT

(5).

22 77 (: 52) , 가 24 ,

가 17 . CT

1 20 , 2 5 .

(5-7).

41 40 1

CT

가 , CT

CT 가 MR

3 , CT 6

CT GE Highspeed Advantage (General Medical System, Milwaukee, U.S.A) CT , (Ultravist

300, Schering, Berlin, Germany) 90ml (drip infusion)

¹
²
³

1998 5 18 1998 12 21 .

120kVp, 200mAs
(carina) FOV 23cm, 5mm
. CT
가 CT

CT

.

,

.

.

.

.

41 25 (61%) , 12
 , 3
 , 10
(Table 1).
16 (39%)

.
CT 41
20 (49%) 10 , 6 ,
2 , 1 , 1 . CT
2
3
41 27 (66%) ,
12 (29%), 2 (5%) . CT
20 13 (65%)
5 (25%), 2 (10%) . CT

12

8

CT

20

1 (Fig. 1), (aorticopul-

monary window) 4 (Fig. 2), (tracheoe-

sophageal groove) 가 15 (Fig. 3-5) .

(nucleus ambiguus) ,

가,

Table 1. Summary of Extralaryngeal Causes of Vocal Cord Paralysis in 41 Patients

| Etiology | Patients(%) |
|----------------------------------|-------------|
| Idiopathic | 16(39%) |
| Central lesion | |
| Medulla infarction | 2 (5%) |
| Peripheral lesion | |
| Neoplasm | 18(44%) |
| Thyroid cancer | 10 |
| Lymph node metastasis | 5 |
| Esophageal cancer | 2 |
| Jugular foramen neurilemmoma | 1 |
| Trauma | 3 (7%) |
| Blunt trauma | 1 |
| Post-operation | 1 |
| Post-operative radiation therapy | 1 |
| Aortic arch aneurysm | 1 (2%) |
| Tuberculous lymphadenopathy | 1 (2%) |

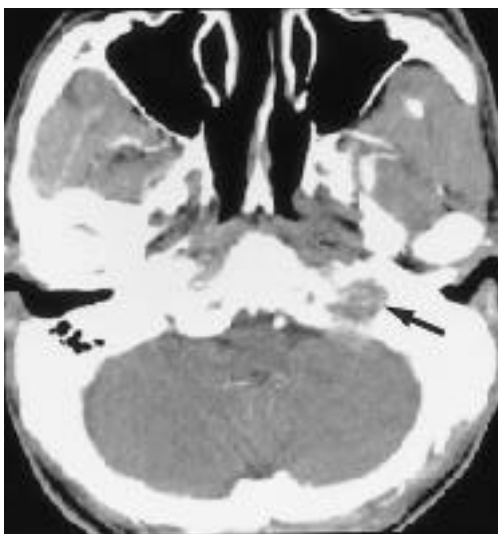
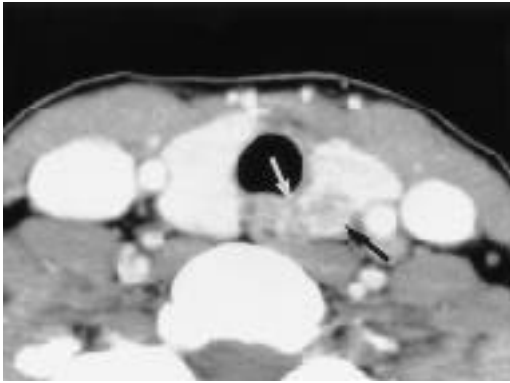


Fig. 1. Neurilemoma of the vagus nerve in the left jugular foramen in a 52-year-old male with left vocal cord paralysis. Contrast-enhanced CT shows a mass in the left jugular foramen (arrow). There is widening and bony erosion of the left jugular foramen.

Fig. 2. Aneurysm of aortic arch in a 77-year-old male with left vocal cord paralysis.

Contrast-enhanced CT shows an aneurysm of the aortic arch with inferior and lateral bulging (arrows) in the aorticopulmonary window. This lesion may compress or stretch the left recurrent laryngeal nerve.



3



4

Fig. 3. Papillary carcinoma of the left thyroid gland in a 35-year-old female with left vocal cord paralysis.

Contrast-enhanced CT shows a small round mass in the left posterior thyroid gland (black arrow). CT also shows obliteration of fat plane of left tracheoesophageal groove (white arrow). On surgery, the left recurrent laryngeal nerve was invaded by the tumor.

Fig. 4. Nodal metastasis in a 60-year-old male with left vocal cord paralysis.

Contrast-enhanced CT shows a lymphadenopathy in the left upper paratracheal area (black arrow) with obliteration of fat plane of the left tracheoesophageal groove (white arrow).



Fig. 5. Tuberculous mediastinal lymphadenopathy in a 70-year-old male with left vocal cord paralysis. Contrast-enhanced CT shows conglomerated and calcified lymph nodes at the left upper paratracheal area (arrow). There is obliteration of fat plane of left tracheoesophageal groove. Tuberculous lymphadenopathy was confirmed by mediastinoscopic biopsy of another mediastinal nodes.

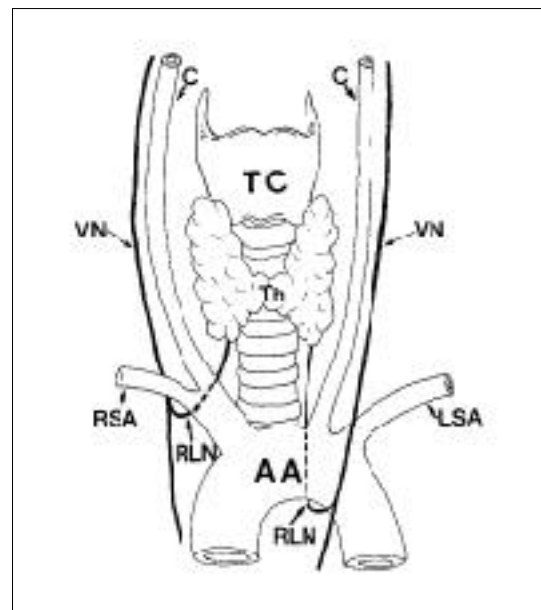


Fig. 6. Diagram demonstrating course of vagus and recurrent laryngeal nerve

The right recurrent laryngeal nerve leaves the vagus nerve at the anterior surface of the right subclavian artery and runs inferiorly, looping around the subclavian artery, then ascends medially in the tracheoesophageal groove. The left recurrent laryngeal nerve passes inferiorly around the arch through the aortopulmonary window to ascend in the tracheoesophageal groove.

C= carotid artery, Th= thyroid gland, AA= aortic arch, RSA= right subclavian artery, LSA= left subclavian artery, TC= thyroid cartilage, VN= Vagus nerve, RLN= recurrent laryngeal nerve

6) (Fig. 6).

(5-

가

가

CT MR

, Jacobs (5)

MR

CT
CT MR

(8).

가

. MR CT

가

가

CT MR

CT

가

(artifact)

2

CT

가

, MR

CT

1

CT

4

2

CT

12-51%

(9),

39%

가

가

가

CT

40%

CT

가

CT

가

CT

(1-3),

49%

가

(1-4,10-15).

가

가

가

(1,2).

가

가

가

(16),

가

(17-20),

, Falk (16)

52%

1. Parnell FW, Brandenburg JH. Vocal cord paralysis : a review of 100 cases. *Laryngoscope* 1970 ; 80 : 1036-1045

2. Yamada M, Hirano M, Ohkubo H. Recurrent laryngeal nerve paralysis. A 10-year review of 564 patients. *Auris Nasus Larynx* 1983 ; 10 : 1-15

3. Grundfast KM, Harley E. Vocal cord paralysis. *Otolaryngol Clin North Am* 1989 ; 22 : 569-597

4. Titche LL. Causes of recurrent laryngeal nerve paralysis. *Arch Otol* 1976 ; 102 : 259-261

5. Jacobs CJ, Harnsberg HR, Lufkin RB, Osborn AG, Smoker WR, Parkin JL. Vagal neuropathy : evaluation with CT and MR imaging. *Radiology* 1987 ; 164 : 97-102

6. Glazer HS, Aronberg DJ, Lee JK, Sagel SS. Extralaryngeal causes of vocal cord paralysis : CT evaluation. *AJR* 1983 ; 141 : 527-531

7. Mancuso AA, Tamakawa Y, Hanafée WN. CT of the fixed vocal cord. *AJR* 1980 ; 135 : 529-534

8. Stevens MH, Stevens CN. Vocal cord paralysis. *Ear Nose Throat J* 1983 ; 62 : 24-29

9. Willatt DJ, Stell PM. The prognosis and management of idiopathic vocal cord paralysis. *Clin Otolaryngol* 1989 ; 14 : 247-250
10. Tachimori Y, Kato H, Watanabe H, Ishikawa T, Yamaguchi H. Vocal cord paralysis in patients with thoracic esophageal carcinoma. *J Surg Oncol* 1995 ; 59 : 230-232
11. McCall AR, Ott R, Jarosz H, Lawrence AM, Paloyan E. Improvement of vocal cord paresis after thyroidectomy. *Am Surg* 1987 ; 53 : 377-379
12. Nuutinen J, Karraja J. Bilateral vocal cord paralysis following general anesthesia. *Laryngoscope* 1981 ; 91 : 83-86
13. Takimoto T, Saito Y, Suzuki M, Nishimura T. Radiation-induced cranial nerve palsy : hypoglossal nerve and vocal cord palsies. *J Laryngol Otol* 1991 ; 105 : 44-45
14. Teixido MT, Leonetti JP. Recurrent laryngeal nerve paralysis associated with thoracic aortic aneurysm. *Otolaryngol Head Neck Surg* 1990 ; 102 : 140-144
15. Panosian MS, Quatela VC. Guillain-Barre syndrome presenting as acute bilateral vocal cord paralysis. *Otolaryngol Head Neck Surg* 1993 ; 108 : 172-173
16. Falk SA, McCaffrey TV. Management of the recurrent laryngeal nerve in suspected and proven thyroid cancer. *Otolaryngol Head Neck Surg* 1995 ; 113 : 42-48
17. Collazo-Clavell ML, Gharib H, Maragos NE. Relationship between vocal cord paralysis and benign thyroid disease. *Head & Neck* 1995 ; 17 : 24-30
18. Rowe-Jones JM, Leighten SEJ, Rosswick RP. Benign thyroid disease and vocal cord palsy. *Ann R Coll Surg Engl* 1993 ; 75 : 241-244
19. Habashi S. Benign thyroid adenoma causing recurrent laryngeal nerve palsy in a child. *J Laryngol Otol* 1991 ; 105 : 141-142
20. Lucarotti ME, Holl-Allen RTJ. Recurrent laryngeal nerve palsy associated with thyroiditis. *Br J Surg* 1988 ; 75 : 1041-1042
21. Hamilton JRL, Varghese G, Shepperd HWH, Stevenson HM. Tuberculous left vocal cord palsy: a timely reminder. *J Laryngol Otol* 1986 ; 100 : 837-838
22. Shah P, Ramakantan R. Hoarseness of the voice due to left recurrent laryngeal nerve palsy in tuberculous mediastinitis. *Arch Otolaryngol Head Neck Surg* 1990 ; 116 : 108

J Korean Radiol Soc 1999;40:621-625

Vocal Cord Paralysis Due to Extralaryngeal Causes : Evaluation with CT¹

Jong Hwa Lee, M.D., Dong Gyu Na, M.D.², Hong Sik Byun, M.D.², Jae Min Cho, M.D.²,
Boo-Kyung Han, M.D.², Young Ik Son, M.D.³, Chung Whan Baek, M.D.³,
Jong Hyun Mo, M.D., Sung Hee Moon, M.D.

¹Department of Diagnostic Radiology, National Police Hospital

²Department of Diagnostic Radiology, Sungkyunkwan University School of Medicine

³Department of Otorhinolaryngology-Head & Neck Surgery, Sungkyunkwan University School of Medicine

Purpose : To evaluate the use of CT in patients with vocal cord paralysis due to extralaryngeal causes, and to use CT for the assessment of extralaryngeal diseases causing vocal cord paralysis.

Materials and Methods : We prospectively studied the results of CT in 41 patients with vocal cord paralysis in whom laryngoscopy revealed no laryngeal cause and physical examination demonstrated no definite extralaryngeal cause. The extralaryngeal cause of vocal cord palsy was determined after comprehensive clinical diagnosis. Enhanced CT scans were acquired from the skull base and continued to the level of the aorticopulmonary window. We used CT to assess the detection rate for extralaryngeal causes and to estimate the extent of extralaryngeal disease and the distribution of lesions.

Results : CT revealed that in 20 of 41 patients(49%) the extralaryngeal causes of vocal paralysis were as follows : thyroid cancer(n= 10), nodal disease(n= 6), esophageal cancer(n= 2), neurogenic tumor(n= 1), aortic aneurysm(n= 1). Lesions were located on the left side in 13 patients(65%), and in the tracheoesophageal groove in 15(75%).

Conclusion : In patients with vocal cord paralysis in whom no definite lesion is seen on physical examination, CT could be a useful primary imaging method for the assessment of extralaryngeal causes.

Index words : Vocal cords
Thyroid, neoplasms

Address reprint requests to : Dong Gyu Na, M.D., Department of Diagnostic Radiology, Samsung Medical Center,
#50, Irwon-Dong, Kangnam-Ku, Seoul, 135-710, Korea.
Tel. 82-2-3410-2518 Fax. 82-2-3410-2559