Bilateral abductor paralysis of the vocal cords in the course of neurological diseases: report of 5 cases

Palesse N.,* Marelli A.,** Legge M.P.***

* Clinica Neurologica - Università de L’Aquila
** Servizio di Neurofisiopatologia
*** Servizio di Rieducazione Motoria, L’Aquila

We report 5 cases of bilateral abductor paralysis of the vocal cords (Gerhardt syndrome) with attacks of nocturnal asphyxia in patients with Parkinson disease, Shy-Drager syndrome, amyotrophic lateral sclerosis and tumor of the posterior cranial fossa.

Key-Words: Gerhardt syndrome — bilateral laryngeal paralysis — Parkinson disease — amyotrophic lateral sclerosis — meningioma of the foramen magnum

Introduction

Laryngeal paralyses (LP) may be classified by the site of the neurological lesion as either central (10%) or peripheral (90%) and by muscular involvement as unilateral or bilateral, complete or incomplete. Peripheral paralyses are as a rule complete and unilateral while central paralyses are more often bilateral and incomplete [1]. The etiopathogenesis of LP is summarized in Table I. The rare bilateral LPs, which carry a harsh prognosis, sometimes complicate the course of neurological diseases (Table II) and must be diagnosed quickly, because they require emergency treatment. We report 5 cases of bilateral abductor paralysis in patients with neurological diseases, 3 of whom were treated with tracheostomy to combat attacks of asphyxia.

Case reports

Case 1
A 60 year old man with a 10-year history of Parkinson disease, treated with L-Dopa and carbidopa, had been suffering for about 1 year from dyspnea, increasingly severe laryngeal stridor and inspiratory recession of the chest wall, the symptoms worsening at night. Admitted as an emergency because of attacks of asphyxia, the patient underwent tracheotomy with insertion of an indwelling catheter, which is still in place.

Case 2
A 58 year old man with a 2-year history of Parkinsonian-type extrapyramidal symptoms and marked postural hypotension with fainting attacks and incontinence of urine, on treatment
### TABLE I. Etiopathogenesis of Laryngeal Paralyses

<table>
<thead>
<tr>
<th>Central</th>
<th>Acute</th>
<th>Infective</th>
<th>Encephalitis</th>
<th>Poliomyelitis</th>
<th>Endocarditic Embolism</th>
<th>Hemorrhage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chronic</td>
<td>Compressive</td>
<td>Tumors</td>
<td>Vascular Malformations</td>
<td>Multiple Sclerosis</td>
<td>Parkinson Disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Demyelinating</td>
<td>Degenerative</td>
<td>Amyotrophic Lateral Sclerosis</td>
<td></td>
<td>Syringobulbia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Degenerative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Congenital</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vascular</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peripheral</td>
<td>Radicular syndromes</td>
<td>Infective</td>
<td>Sclerosing Meningoradiculitis</td>
<td>(Syphilitic and Tuberculous)</td>
<td>Posterior Cranial Fossa Tumors</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compressive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Traumatic</td>
<td></td>
<td>Aneurysms of Aortic Arch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compressive</td>
<td></td>
<td>Adenopathies</td>
<td>Diphtheria</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infiltrative</td>
<td></td>
<td>Syphilis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neuritic</td>
<td></td>
<td>Guillian-Barré Syndrome</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Diabetes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE II. Bilateral Laryngeal Paralyses

**INCOMPLETE**
- Bilateral adductor paralysis:
  - Affects all adductors or spares the interarytenoid
  - Central lesion:
    - Supranuclear
    - Nuclear
  - Symptoms:
    - Dysphonia/Aphonia with normal inhalation
    - Laryngoscopy:
      - Abduction spared
      - Cords fixed (abduction) in phonation
- Bilateral abductor paralysis (Gerhardt syndrome):
  - Affects posterior cricoarytenoid bilaterally (only abductor muscle of the vocal cords)
  - Lesion:
    - Radicular
  - Symptoms:
    - Continuous dyspnea (inspiratory) and risk of asphyxia with normal phonation
    - Laryngoscopy:
      - Cords immobile or almost near midline during phonation

**COMPLETE**
- Affects all the laryngeal muscles
- Peripheral lesion:
  - Compression
  - Infiltration
  - Iatrogenic (surgical)
- Symptoms:
  - Hoarseness, two-tone or toneless voice
- Ziemssen phonatory diplegia (cords in intermediate position)
- Riegel respiratory diplegia (cords in paramedian position)