Ventricular Folds in Laryngeal Dystonia Treated with Botulinum Toxin

Silveira PAL, De Biase NG
Otolaryngology and Head and Neck Surgery Department
Federal University of Sao Paulo - Brazil

ABSTRACT

Objectives: Analyze the behavior of Vestibular Folds (VF) in Adductor Laryngeal Dystonia (ALD) after and before the treatment with unilateral botulinum toxin injection (BTX) during different laryngeal tasks, comparing treated side (IPSI) and opposite side (CLT).

Methods: 23 patients with adductor laryngeal dystonia were studied retrospectively. Categorical data were obtained about ventricular fold medial compression from qualitative judgment of the flexible laryngoscopic dynamic examination. It was realized after and before BTX comparing the compression grade of VF in IPSI with CLT. The VF medial compression was graduated in 4 points scale. The tasks were sustained phonation of /e/ and /i/ during inspiration, soft breathing, whispering, emissions with voiceless sounds and voiceful sounds, sniff and whistling. McNemar and Wilcoxon tests were used to statistical analysis.

Results: Statistical significance was noted on improvement of medial compression of CLT and on reduction of medialization of IPSI as follow: Soft breathing (IPSI: *p=0.031* CLT: *p=0.039*), sustained /i/ (IPSI: *p<0.001* CLT: *p=0.001*), sustained /e/ (IPSI: *p=0.012* CLT: *p<0.001*), phonation with voiceful sounds (IPSI: *p<0.001* and voiceless sounds (IPSI: *p<0.001*). The whisking (IPSI: *p=0.001* CLT: *p=0.057) and the whispering (CLT: *p=0.125) was significant improved IPSI, without significance at CLT. Phonation during inspiration and sniff didn’t show significance.

INTRODUCTION

Laryngeal dystonia is an action-induced, laryngeal motor disorder. The adductor type of this disease is the most common and it is caused by irregular hyperadduction of the vocal folds with or without the participation of the ventricular folds. These patients exhibit a choked, strained, strangled voice quality. Botulinum toxin injection is the current treatment. The flexible fiberoptic laryngoscopy allow to observe the glottal function before and after treatment with BTX. The aim of this study is analyze the behavior of Ventricular Folds in Adductor Laryngeal Dystonia after and before the treatment with BTX during different laryngeal tasks, comparing treated side (IPSI) and opposite side (CLT).

METHODS & MATERIALS

Inclusion criteria:
- Focal Adductor Laryngeal Dystonia
- First flexible laryngoscopic dynamic evaluation
- Evaluation after unilateral botulinum toxin injection

Exclusion criteria:
- Non focal dystonia
- Non permission
- Inadequate analysis of endoscopic examination
- Incomplete specific tasks

Grades of Ventricular Folds medialization during laryngoscopic Evaluation (Left and Right sides)

<table>
<thead>
<tr>
<th>Grades</th>
<th>IPSI</th>
<th>CLT</th>
</tr>
</thead>
<tbody>
<tr>
<td>R: grade 0</td>
<td>L: grade 2</td>
<td></td>
</tr>
<tr>
<td>R: grade 1</td>
<td>L: grade 1</td>
<td></td>
</tr>
<tr>
<td>R: grade 2</td>
<td>L: grade 0</td>
<td></td>
</tr>
<tr>
<td>R: grade 1</td>
<td>L: grade 3</td>
<td></td>
</tr>
<tr>
<td>R: grade 0</td>
<td>L: grade 2</td>
<td></td>
</tr>
<tr>
<td>R: grade 1</td>
<td>L: grade 1</td>
<td></td>
</tr>
</tbody>
</table>

RESULTS

23 patients

- 21 ± 2
- Mean age: 58±13.7 (25 to 76) years
- Median age: 61 years
- Mean Time of evaluation after BTX: 3.5 +/- 2.8 weeks
- Mean BTX dosage: 8.34 +/- 0.8 UI
- BTX side: Left in 21 patients
- Tremor presence: 47.8%

CONCLUSIONS

There is a statistically significant alteration in the medialization of ventricular folds in laryngeal dystonia after unilateral botulinum toxin injection. It depends on solicited task and the treated side or untreated side.

The improvement of medial compression on untreated side and reduction on treated side was noted in sustained phonation of /e/ and /i/, at rest and in phonation with predominance of voicefull and voiceless sounds.

In the whistling and whispering, only in the treated side demonstrate reduction on ventricular compression without significance on the other side.

The phonation during inspiration and the "sniff" didn’t show difference between the sides and the moment of injection.

REFERENCES