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Botulinum Toxin Type A Injections into the Cricopharyngeal Muscle to Treat Upper Esophageal Dysfunction

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**Botulinum Toxin Type A Injections into the Cricopharyngeal Muscle to Treat Upper Esophageal Dysfunction**

Brittani R. Greene  
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**Research Question**

What is the efficacy and duration of an improved swallow due to botulinum toxin injections into the cricopharyngeal muscle?

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**Summary of studies**

Most studies used scales to score the severity of dysphagia before and after treatment. These scales showed a reduction in penetration and aspiration, an increase in swallow safety, and an increase in the percent of UES opening, changes in diet, and patient personal ratings. The literature indicates botulinum toxin injections is an effective and effective treatment that improves swallowing function for most patients. Patients who did not benefit from BtxA may have had other complications, or a possible diffusion of the BtxA into the surrounding muscle. Some literature agreed that subjects who had good outcomes for this treatment would be a good candidate for the permanent surgical treatment (Ahsan et al., 2000).

**Table 1**

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Diagnostic findings</th>
<th>Amount of BtxA Injected</th>
<th>Time after treatment (days)</th>
<th>Mean opening of UES before treatment (%)</th>
<th>SD</th>
<th>Mean opening of UES after treatment (%)</th>
<th>SD</th>
<th>30 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HSBS</td>
<td>10 units</td>
<td>1</td>
<td>41%</td>
<td>14%</td>
<td>71%</td>
<td>24%</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Hypersensitive HSBS</td>
<td>20 units</td>
<td>2</td>
<td>67%</td>
<td>12%</td>
<td>85%</td>
<td>15%</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Hypersensitive HSBS</td>
<td>15 units</td>
<td>2</td>
<td>75%</td>
<td>10%</td>
<td>92%</td>
<td>8%</td>
<td>No</td>
</tr>
</tbody>
</table>

**Table 2**

<table>
<thead>
<tr>
<th>Study</th>
<th># of subjects</th>
<th>Mean opening of UES before treatment (%)</th>
<th>SD</th>
<th>Mean opening of UES after treatment (%)</th>
<th>SD</th>
<th>30 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiu et al., (2004)</td>
<td>22</td>
<td>46%</td>
<td>10%</td>
<td>72%</td>
<td>14%</td>
<td>No</td>
</tr>
<tr>
<td>Murry et al., (2004)</td>
<td>14</td>
<td>54%</td>
<td>8%</td>
<td>87%</td>
<td>10%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Deviations from reviewed literature**

Chiu et al., (2004) indicated there was no significant difference in swallowing scores with the two treatments, but did note that there was a trend towards better scores in the pharmacological group. Further studies need to be done on the mechanisms that impact duration. One study suggested possible reasons could be the different injection procedures, the patient's individual response, and the precision of muscle injection. The patient in this study had severe dysphagia due to CP muscle spasms. He received swallowing therapy which first was not effective. Manometry was performed to measure strength and muscular coordination. Manometry combined with a modified barium study diagnosed his CP muscle spasms. He was injected with 180 units of Dysport. The first injection lasted six weeks and the second injection showed almost no improvement in swallowing. The reason was because the BtxA diffused into the pharyngeal muscle. This relaxed the muscle causing food to remain in the pharynx. To avoid anesthesia, he chose application of the BtxA through flexible endoscopy. BtxA is better controlled under rigid endoscopy and the study felt this was why there was an diffusion into the pharyngeal muscle. Overall this study found CP dysphagia is treatable with BtxA, but success is limited in regards to time:


**Conclusion**

The literature shows BtxA to be a safe and effective method in treating upper esophageal dysphagia, as well as increasing its duration. This treatment works best in isolated cases of CP dysfunction, and may be a good procedure for patients with a permanent treatment such as myotomy. More research needs to be done on the effects of duration. Overall dysphagia affects many people due to a numerous of disorders. BtxA can be used as a non permanent but effective treatment to improve the bolus quality of dysphagia with UES dysfunctions. Further research on the effects of swallowing therapy after botulinum toxin injection should be done, and if positive results are found this could be incorporated into evidence based practice and used by speech pathologists.