Interarytenoid Botulinum Toxin Injection for Recalcitrant Vocal Process Granuloma

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INTRODUCTION

• Granulomas of the larynx are benign lesions
• They are generally centered on tip of cartilaginous vocal process of the arytenoid cartilage
• Their etiology is thought to be multifactorial, with causes including contact, vocal hyperfunction, post-intubation, hyperacidity, glottal insufficiency, or some combination thereof
• Multiple modalities have been employed to treat granulomas with varying degrees of success:
  1. Surgical excision has a high rate of recurrence (20-60%)2
  2. PPI therapy requires extended treatment duration (5-7 months)3
• Nasri et al. use Thyroarytenoid (TA) botulinum toxin successfully in 6/6 patients with granuloma3
• Pham et al. note rapid resolution (50% at 2 weeks, complete by 8 wks.) with same technique4
• We hypothesize that it may be possible to reduce contact along the vocal process to induce healing with interarytenoid injection while minimizing dysphonia

METHODS AND MATERIALS

• Study approved by MEEI Institutional Review Board
• Retrospective Review
• 6 patients who had all been treated with speech therapy, surgical excision, and/or proton pump inhibitors (table 1)
• 2/6 underwent simultaneous steroid injection into granuloma (table 2)
• Pre- and post-treatment examinations with distal-chip nasoaryngoscopy and videostrobscopy
• Percutaneous IA botulinum toxin injection via the trans-thyroid membrane approach described by Amin5
• Dosage of botulinum toxin ranged from 5-25 units (table 2)
• Laryngeal EMG was used to confirm placement in the two initial injections to confirm muscle activity. Subsequent injections were performed without the laryngeal EMG.

RESULTS

• 4 of 6 patients experienced complete resolution of granuloma, and 1 of 6 patients experienced 90% resolution (TABLE 2)
• 2 patients received booster injections performed by the same technique after inadequate response to first injection
  Range of time to total resolution was 1.25 to 3 months (mean 2.4 mos.)
• 3 patients received simultaneous steroid injections into the granulomas
• 1 patient underwent simultaneous surgical excision with botulinum toxin type A injection secondary to airway concerns
• 1 patient underwent concurrent injection into the TA and cricothyroid muscles
• No serious adverse effects were noted. All patients tolerated the injection well
  Follow up time ranged from 1.5 to 16 months (mean 6 months)
• No recurrences were noted
• 3 of 6 patients did note mild to moderate breathiness. No patients missed work.
• No patients noted dysphagia or required alteration in diet
• No patients experienced injection site complications

DISCUSSION

• In 1994, Nasri and colleagues began using botulinum toxin injections into the TA for granulomas, followed by a series of others3,4,6,7
• These studies demonstrated that reducing the amount of trauma to the vocal folds at the vocal process allows for rapid resolution
• In our clinical practice, granulomas’ response to this treatment is variable
• Continued vocal process contact after TA injection was occasionally noted
• IA injection was postulated to be an effective alternative, reducing of vocal process contact, while minimizing dysphonia
• 3/6 patients who underwent IA injection reported breathy voice after injection, one of whom received concurrent TA injection
• In their series of 7 TA injections, Damrose and Damrose reported dysphonia in 7/72
  Their mean time to resolution was 4.3 weeks
• Mean time to resolution longer in our study (2.4 months)

CONCLUSIONS

• This study introduces a new approach in the treatment of recalcitrant vocal fold granuloma
• Limited by retrospective nature, small sample size, limited follow up time, and use of multiple modalities (steroids)
• More research to be done to elucidate etiology of individual granulomas for better treatment

REFERENCES