Glucocorticoids for Laryngeal Disease: A Survey of Otolaryngologists

Nandini Govil, BA; Benjamin Rafii, MD; Benjamin C. Paul, MD; Ryan Ruiz, BS; Milan R. Amin, MD[1]; Ryan C. Branski, PhD[1]
[1]NYU Voice Center, Department of Otolaryngology- Head and Neck Surgery, New York University School of Medicine

ABSTRACT

Objective: Glucocorticoids (GCs) are commonly utilized in the treatment of laryngological disorders despite the absence of clear guidelines regarding their use. We sought to assess clinical practice patterns regarding GC use for various laryngeal diseases and to ascertain factors underlying the selection of particular GCs for different vocal fold pathology.
Methods: A web-based 20-question survey querying clinical indications for GC use and other factors influencing decision-making in GC administration was distributed to 5,280 otolaryngologists via email using a commercially-available database.
Results: Of 212 respondents, 99% reported glucocorticoids to be valuable in their practice. *Previous experience/results* and *familiarity* (74%, 59% respectively) were the most commonly cited reasons for choosing a particular glucocorticoid; *pharmacokinetic profile* and *academic literature* were infrequently cited reasons. Fifty-four percent of respondents were more likely to prescribe GCs for vocal performers compared to other patients. Additionally, most respondents stated that the potential for side effects only *occasionally* prevented GC utilization.
Conclusions: GC prescription practices vary greatly among otolaryngologists. Drug choice appears to be driven primarily by clinician preference and personal experience rather than by specific pharmacologic or physiologic rationale. These findings likely reflect the current lack of well-constructed studies in laryngologic literature to guide glucocorticoid selection and administration for benign disorders of the larynx, and highlight an important potential area for future studies.

CONTACT

Ryan C. Branski, PhD
NYU Voice Center, Department of Otolaryngology- Head and Neck Surgery
345 East 37th Street, Suite 306
Email: ryan.branski@nyumc.org
Phone: 646.754.1207

Poster Design & Printing by Genigraphics® - 800.790.4001

INTRODUCTION

In laryngology, the role of glucocorticoids in treating diseases such as croup,[1] laryngeal edema,[2,3] and sarcoidosis[4] is well-established. However, there is a lack of evidence-based literature discussing the use of GC's for other laryngeal processes. This void in the literature results in vague, confusing, and sometimes altogether absent recommendations regarding GC use that may not be reflective of current clinical practice patterns. As a result, although some studies suggest a potential role for glucocorticoids in the management of benign vocal fold disease, it is possible that GCs are under or incorrectly utilized among currently practicing otolaryngologists.

The purpose of this study is to better describe current practice patterns and factors influencing decision-making regarding GC use for laryngeal disease among practicing otolaryngologists.

METHODS AND MATERIALS

Survey Development. An internet survey was designed based on a review of the literature as well as expert consensus from several otolaryngologists. The final survey consisted of 20 multiple-choice questions arranged into four sections. **Section 1** collected background demographics. **Section 2** investigated the role of GCs as treatment options for various laryngeal disorders, and the respondents' preferred GC, route of administration, and perceived efficacy for each disorder. **Section 3** explored factors influencing clinician decision-making when prescribing GCs and the global value of GCs in practice. **Section 4** examined clinician experience with side effects associated with GCs.
Survey Distribution. The survey was approved by the Institutional Review Board at New York University School of Medicine, and distributed to a commercially available email list of 5,280 domestic and international otolaryngologists. Responses were kept anonymous.
Data Accrual and Statistical Analyses. All data were collected by the Survey Monkey, an online data management system, and were descriptively and quantitatively analyzed by the authors.

RESULTS

Respondent Profile. Overall, 212 of 5,280 (4%) otolaryngologists responded to the survey. There were a higher number of private practitioners (47%) compared to academic (26%) or mixed practice practitioners (27%). A nearly equal proportion of respondents reported caring for adults (49%) versus 'both pediatric and adult' patients (47%). The majority of respondents (68%) reported that laryngology constituted 20-50% of their practice, while 17% of respondents reported that greater than 50% of their practice was dedicated to laryngology. There was a wide range of clinical experience and broad geographic representation among respondents (data not shown).

RESULTS

Perceived Efficacy of Glucocorticoids for Specific Laryngeal Disorders. There was a wide range of opinions regarding perceived efficacy of GCs for various laryngeal disorders. The majority of respondents felt that GCs 'always' or 'often' improved outcomes in the treatment of angioedema of the larynx, croup, allergic laryngitis, acute laryngitis, and rheumatologic laryngeal lesions. However, for the other categories of laryngeal disease, the majority of respondents felt that GCs improved outcomes 'rarely' or 'never'. Views were somewhat split in the case of vocal fold granuloma and Reinke's edema, but still favored no role for GCs. (**Figure 1**).

Route of Administration. Respondents were queried on the preferred route of GC administration for different laryngeal diseases, as well as the preferred GC for each route of administration. Intravenous GCs were most commonly used in angioedema (88%) and croup (60%). Oral steroids were most frequency prescribed for rheumatologic laryngeal lesions (68%), allergic laryngitis (53%) and acute laryngitis (48%). Intralesional steroid injection was most commonly utilized for treatment of vocal fold scar and vocal fold granuloma; in the case of granuloma, oral steroids were commonly prescribed as well (**Figure 2**).

Across all laryngeal disorders, dexamethasone was the most common GC used for intravenous (78.8%), intramuscular (32.2%), and direct laryngeal injection administration (60.1%). Prednisone was the most common orally administered GC (56.3%), followed by methylprednisolone (43.1%), prednisolone (42.1%), and dexamethasone (31.2%). Other commonly used intravenously administered GCs included methylprednisolone (44.2%) and hydrocortisone (26.9%). Triamcinolone was a popular choice for direct laryngeal injection (16.3%) (data not shown).

GC Selection. *Previous experience* (74%) and *familiarity* (59%) were the two most common factors cited as 'very important' in the selection of GCs for treatment of laryngeal disease. *Half-life* and *dosing schedule* (57% each) were also prominent reasons for choice of GC. In contrast, GC strength, mechanism of action, academic literature, side-effect profile, and empirical data were cited as 'moderately important' factors for less than 50% of respondents; price and insurance coverage were the least cited reasons (**Figure 3**).

Factors Influencing Decision-Making and Global Value. Ninety-nine percent of respondents reported that GCs were valuable in their practice. Ninety-eight percent of respondents indicated that they always or often visualize the larynx before prescribing GCs for laryngeal disease. Fifty-four percent of respondents were more likely to prescribe GCs for vocal performers; in these cases, oral prednisone was most commonly prescribed (data not shown).

Morbidity Associated with GC Use. The percentage of respondents who reported 'never' seeing laryngeal muscle/mucosal atrophy side effects across all routes of GC ranged from approximately 68% for localized injection into the larynx to approximately 86% for oral administration. The incidence of laryngeal candida was increased in patients given inhaled GCs (data not shown). Across all routes of administration, 70% of respondents reported that side effects associated with GCs 'occasionally' prevented their prescription for laryngeal disease. In contrast, when focusing on direct laryngeal administration, approximately 40% replied that side effects 'occasionally' prevented GC prescription, and approximately 50% said that side effects 'never' affected GC prescription practices (**Figure 4**).

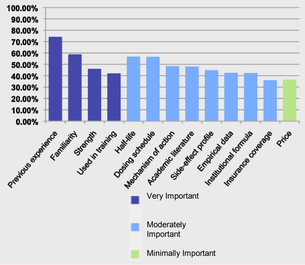

Figure 3. The percentage of respondents citing a factor as "very," "moderately," or "minimally" important when selecting a GC, independent of route of administration.

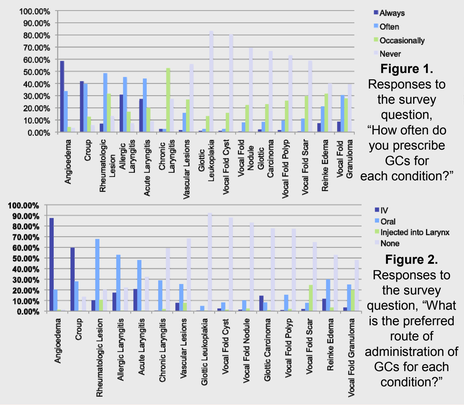

Figure 1. Responses to the survey question, "How often do you prescribe GCs for each condition?"

Figure 2. Responses to the survey question, "What is the preferred route of administration of GCs for each condition?"

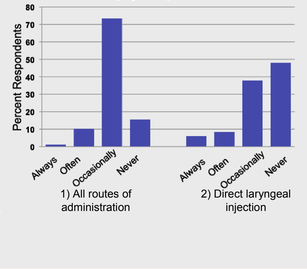

Figure 4. The frequency that side effects prevent the prescription of GCs for laryngeal disease 1) across all routes of administration and 2) specific to direct laryngeal injection.

DISCUSSION

The results of this study show significant variability in GC prescription patterns among otolaryngologists. There seems to be clinical consensus on the use of GCs for treatment of certain diseases such as croup and angioedema. However, for other vocal pathology, the use of GCs is variable. These prescription practices do not fit with current evidence-based literature. For example, although a range of newer literature shows promising results for the use of GC injection in the treatment of vocal cysts, polyps, nodules, granuloma and scar,[5-8] our data suggests that many otolaryngologists have not adopted the use of direct laryngeal injections for the treatment of benign vocal fold pathology.

One reason behind these prescription practices may be the use of subjective factors such as previous experience and familiarity to drive treatment decisions rather than more objective factors such as academic literature and empirical data. Also, the minimal use of direct laryngeal injection may be reflective of the specialized training needed for these injections, which is often out of the scope of the general otolaryngologist.

Unfortunately, the response rate for the online survey was low (4%), a limiting factor in data analysis and a certain weakness of the current study. Also, the survey design of the study is subject to selection and recall bias. In addition, background demographics suggest that most survey respondents were general otolaryngologists. In the future, it will be useful to separate out responses from the subgroup who noted a specialization in laryngology (greater than 50% of practice dedicated to laryngology).

CONCLUSIONS

The current study presents results from a internet distributed survey of otolaryngologists and indicates that there is significant variability in opinions regarding the efficacy and optimal route of administration of GCs for many laryngeal diseases. Although recent studies have begun to show promise in local injection of GC for many laryngeal diseases, these practices have not yet gained widespread acceptance, perhaps due to the technical skill required for this technique. Prospective, randomized studies examining GC use in laryngeal disorders may help establish better guidelines for GC therapy.

REFERENCES

1. Rosekrans JA. Viral croup: current diagnosis and treatment. *Mayo Clin Proc.* Nov 1998;73(11):1102-1106; discussion 1107.
2. Kairys SW, Olmstead EM, O'Connor GT. Steroid treatment of laryngotracheitis: a meta-analysis of the evidence from randomized trials. *Pediatrics.* May 1989;83(5):683-693.
3. Ossoff RH, Wolff AP, Ballenger JJ. Acute epiglottitis in adults: experience with fifteen cases. *Laryngoscope.* Jul 1980;90(7 Pt 1):1155-1161.
4. Krespi Y, Husain S, Mitrani M, Meltzer C. Treatment of laryngeal sarcoidosis with intralesional steroid injection. *The Annals of otology, rhinology & laryngology.* 1987;96(6):713-715.
5. Campagnolo AM, Tsuji DH, Sennes LU, Imamura R. Steroid injection in chronic inflammatory vocal fold disorders, literature review. *Braz J Otorhinolaryngol.* Nov-Dec 2008;74(6):926-932.
6. Mortensen M, Woo P. Office steroid injections of the larynx. *Laryngoscope.* Oct 2006;116(10):1735-1739.
7. Tateya I. Laryngeal steroid injection. *Curr Opin Otolaryngol Head Neck Surg.* Dec 2009;17(6):424-426.
8. Tateya I, Omori K, Kojima H, Hirano S, Kaneko K, Ito J. Steroid injection to vocal nodules using fiberoptic laryngeal surgery under topical anesthesia. *Eur Arch Otorhinolaryngol.* Oct 2004;261(9):489-492.