Editorial: Insight into allergic, rhinologic and skull based pathologies

Over the past few years, we have witnessed numerous and continuing advances in our understanding of molecular mechanisms facilitating chronic rhinosinusitis (CRS). The current issue of the *American Journal of Rhinology and Allergy* contributes further to this area of study. Drilling *et al.*¹ characterizes the *in vitro* activity of a bacteriophage cocktail against *Staphylococcus aureus* biofilms, revealing its effectiveness in eliminating the organism from a substantial portion of clinical isolates in both planktonic and biofilm forms. Hwang and colleagues examine characteristics of H2S in CRS, illustrating its role as an important CRS-associated inflammatory mediator.² Continuing this trend of translationally relevant scholarship, Batzakakis *et al.*³ and Topal *et al.*⁴ respectively delineate the relationship specific adhesion molecules and reactive oxygen species have with nasal polyposis.⁴

The editorial staff at the *American Journal of Rhinology and Allergy* understands the realization that proficiency in basic sciences is fundamental for the advancement of the subspecialty by also offering several other potentially impactful analyses. Luukkainen and colleagues⁵ explore the possible mechanisms present in asthma and CRS with nasal polyps among patients residing in urban environments, while Jeong *et al.*⁶ suggest the utility of nasal nitric oxide levels in screening for CRS with polyposis. This issue offers multiple analyses supporting the integral role Staphylococcal enterotoxin may play in chronic airway disease, via differentiation of regulatory T-cells (TRegs)⁷ or more direct effects on human airway epithelial cells.⁸ To round off this issue's invaluable basic and translational science contributions, Pajor and colleagues⁹ explore immunologic aspects facilitating the development of sinonasal inverted papillomas, and Kim¹⁰ examines the impact of environmental considerations, including alcohol and smoking, on allergy risk.

In addition to the important studies at the molecular level, this issue offers exciting and complementary findings that may be of use to practitioners in the office setting. Sedaghat *et al.*¹¹ tackle an understudied topic, examining geographic patterns in emergency department imaging for pediatric patients with sinusitis, and report previously nondescribed disparities. Lee and Chiu¹² note a role for topical antiinfective irrigations in CRS through their systematic review of the literature.

In addition to studies relevant to allergic and inflammatory processes, the *American Journal of Rhinology and Allergy* continues to support the importance of skull base topics. Sunaryo *et al.*¹³ detail the available literature regarding anterior skull base and sinonasal schwannomas, noting the importance of including these entities in a differential diagnosis of any anterior skull base mass involving the cribriform plate. These authors also note that gross-total resection of these lesions should be the goal of operative management.

Influenza vaccinations protect millions of individuals in our society, particularly vulnerable populations such as the elderly. Despite their obvious success, adverse reactions have been reported, with some of these reactions being anecdotal in nature. Doty *et al.*¹⁴ examine a large sample of patients with chemosensory dysfunction, finding that fewer than 1% attribute their dysfunction to this vaccine. Stauber *et al.*¹⁵ look at another adverse reaction, finding that factors such as diabetes and probably obesity may contribute to more severe events of angioedema induced by angiotensin-converting enzymes inhibitors (ACEI). They also note that the high recurrence rate of

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ACEI-induced angioedema preceding subsequent life threatening events points to under-diagnosis of this reaction.

In an effort to control rising healthcare costs, identification of efficient and inefficient practices is paramount in the current political environment. Kennedy and colleagues¹⁶ add to the considerable body of relevant literature, examining at what age the initiation of specific subcutaneous immunotherapy exceeds the cost-effectiveness of lifetime intranasal steroid therapy while Chen *et al.*¹⁷ conduct a multicenter prospective trial demonstrating its safety.

Dysosmia and dysgeusia can profoundly impact quality of life. Steinbach *et al.*¹⁸ study their prevalence using objective testing in patients with vascular malformations of the head and neck, finding a

significant relationship even when the nose and/or tongue are not malformed. Parikh *et al.*¹⁹ study another significant topic affecting quality of life and overall health, demonstrating a significantly positive correlation between clinical control of rhinitis symptoms and control of obstructive sleep apnea. This suggests this approach should be emphasized among practitioners in a wide variety of specialties. Turning to obstructive sleep apnea in the pediatric population, Huseni *et al.*²⁰ note that children with rhinitis have distinct obstructive sleep apnea features with a higher degree of REM-sleep, suggesting future areas of research in examination of pediatric sleeping disorders.

Diagnostic techniques have rapidly evolved in recent years, offering an important perioperative adjunct to determining optimal medical and surgical strategies. Manjunatha *et al.*²¹ illustrates an exciting potential method of evaluating nasal obstruction, indicating the polyvinylidene fluoride nasal sensor provides comparable results to those gained from the use of peak nasal inspiratory flow measurements. Another analysis notes the utility of pre-operative computed tomography scans in patients undergoing septoplasty to evaluate the grade of deviation and degree of inferior turbinate hypertrophy.²²

Cadaveric studies offer invaluable insights into potential surgical techniques and play an important role in determining subsequent surgical approaches. Craig *et al.*²³ describe how upper lateral strut grafts improved patency in cadaveric internal nasal valves, most notably in cadavers with narrow internal nasal valves. Kenyon and Antisdell²⁴ offer an alternative for patients in need of surgery involving the lateral orbital apex. In their cadaveric study, endoscopic approaches to the lateral orbital apex are explored. The authors conclude that this approach can be considered for patients with irreparably damaged vision and warned that this approach should be considered with caution in patients with intact vision due to the possibility of optic nerve traction. Saedi *et al.*²⁵ used spreader flaps in a pilot study including 32 patients, finding this approach has promise. Pagella *et al.*²⁶ discuss a conservative alternative in endoscopic treatment of inverted papilloma, noting that pedicle oriented endoscopic surgery potentially offers good disease control, shorter operating time, while sparing uninvolved structures.

An analysis from the Medical University of South Carolina examined skull base thickness in radiologic images of patients with spontaneous cerebrospinal fluid leaks, finding differences, although it is unclear whether such differences predispose patients to leaks rather than just being a consequence of any underlying pathophysiology.²⁷ Finally, this issue also contains further study of the relationship between chronic adenoid disease and CRS in the pediatric population,

noting that history and physical examination are notoriously unreliable predictors.²⁸

The wide variety of analyses, ranging from those focusing on basic science and translational research to those containing significant clinical findings that can be immediately applied in medical decision making, offer insight into the expanding knowledge base regarding patients with allergic, rhinologic, and skull base pathologies. Our hope is that these manuscripts will not only prove useful to practicing clinicians and scientists, but offer ideas for further scholarship that will continue to expand our understanding of the complex mechanisms underlying allergic, rhinologic, and skull base disorders.

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