Pan Arab Rhinology Society
PARS Reader's Digest

Reader Digest

Digested by Dr. Tarek Kandil, MD. Consultant, students Hospital, Cairo University

Introduction

This newsletter is intended to provide information that is useful to the student and specialist in the field of rhinology and allergic disorders.

The selected recent material represents important fundamental knowledge, current trends or recent developments in this field.

We hope that this newsletter will help the reader have a greater understanding of rhinology and allergic disorders.

1. Anatomy of the Olfactory Mucosa

Ignacio Salazar[1], Pablo Sanchez-Quinteiro[2], Arthur W Barrios[3], Manuel López Amado[4], José A Vega[5]

Abstract

The classic notion that humans are microsmatic animals was born from comparative anatomy studies showing the reduction in the size of both the olfactory bulbs and the limbic brain relative to the whole brain. However, the human olfactory system contains a number of neurons comparable to that of most other mammals, and humans have exquisite olfactory abilities. Major advances in molecular and genetic research have resulted in the identification of extremely large gene families that express receptors for sensing odors. Such advances have led to a renaissance of studies focused on both human and nonhuman aspects of olfactory physiology and function. Evidence that olfactory dysfunction is among the earliest signs of a number of neurodegenerative and neuropsychiatric disorders has led to considerable interest in the use of olfactory epithelial biopsies for potentially identifying such disorders. Moreover, the unique features of the olfactory ensheathing cells have made the olfactory mucosa a promising and unexpected source of cells for treating spinal cord injuries and other neural injuries in which cell guidance is critical. The olfactory system of humans and other primates differs in many ways from that of other species. In this chapter we provide an overview of the anatomy of not only the human olfactory mucosa but of mucosae from a range of mammals from which more detailed information is available. Basic information regarding the general organization of the olfactory

mucosa, including its receptor cells and the large number of other cell types critical for their maintenance and function, is provided. Cross-species comparisons are made when appropriate. The polemic issue of the human vomeronasal organ in both the adult and fetus is discussed, along with recent findings regarding olfactory subsystems within the nose of a number of mammals (e.g., the septal organ and Grüneberg ganglion)

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2. Intranasal Bolsters: A Novel Technique for Nasal Bone Stabilization

Tom Shokri[1], Peter A Hilger[2], Jessyka G Lighthall[1,3]

Abstract

Nasal bone stabilization, in the setting of comminuted nasal fracture or surgical osteotomy, represents a challenging surgical experience. Postoperative shifting of osseous fragments may result in compromised outcomes in an otherwise well-performed procedure. Although prior studies have reported nasal bone fixation with implementation of wires, plates, or halos, these techniques are often difficult to employ routinely. Herein, the authors describe a novel and facile technique for the maintenance of unstable nasal bones using customized intranasal bolsters

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3. Clinical Practice Guideline: Nosebleed (Epistaxis)

David E Tunkel 1, Samantha Anne 2, Spencer C Payne 3, Stacey L Ishman 4, Richard M Rosenfeld 5, Peter J Abramson 6, Jacqueline D Alikhaani 7, Margo McKenna Benoit 8, Rachel S Bercovitz 9, Michael D Brown 10, Boris Chernobilsky 11, David A Feldstein 12, Jesse M Hackell 13, Eric H Holbrook 14, Sarah M Holdsworth 15, Kenneth W Lin 16, Meredith Merz Lind 17, David M Poetker 18, Charles A Riley 19, John S Schneider 20, Michael D Seidman 21 22 23, Venu Vadlamudi 24, Tulio A Valdez 25, Lorraine C Nnacheta 26, Taskin M Monjur 26

Abstract

Objective: Nosebleed, also known as epistaxis, is a common problem that occurs at some point in at least 60% of people in the United States. While the majority of nosebleeds are limited in severity and duration, about 6% of people who experience nosebleeds will seek medical attention. For the purposes of this guideline, we define the target patient with a nosebleed as a patient with bleeding from the nostril, nasal cavity, or nasopharynx that is sufficient to warrant

medical advice or care. This includes bleeding that is severe, persistent, and/or recurrent, as well as bleeding that impacts a patient's quality of life. Interventions for nosebleeds range from self-treatment and home remedies to more intensive procedural interventions in medical offices, emergency departments, hospitals, and operating rooms. Epistaxis has been estimated to account for 0.5% of all emergency department visits and up to one-third of all otolaryngology-related emergency department encounters. Inpatient hospitalization for aggressive treatment of severe nosebleeds has been reported in 0.2% of patients with nosebleeds.

Purpose: The primary purpose of this multidisciplinary guideline is to identify quality improvement opportunities in the management of nosebleeds and to create clear and actionable recommendations to implement these opportunities in clinical practice. Specific goals of this guideline are to promote best practices, reduce unjustified variations in care of patients with nosebleeds, improve health outcomes, and minimize the potential harms of nosebleeds or interventions to treat nosebleeds. The target patient for the guideline is any individual aged ≥3 years with a nosebleed or history of nosebleed who needs medical treatment or seeks medical advice. The target audience of this guideline is clinicians who evaluate and treat patients with nosebleed. This includes primary care providers such as family medicine physicians, internists, pediatricians, physician assistants, and nurse practitioners. It also includes specialists such as emergency medicine providers, otolaryngologists, interventional radiologists/neuroradiologists and neurointerventionalists, hematologists, and cardiologists. The setting for this guideline includes any site of evaluation and treatment for a patient with nosebleed, including ambulatory medical sites, the emergency department, the inpatient hospital, and even remote outpatient encounters with phone calls and telemedicine. Outcomes to be considered for patients with nosebleed include control of acute bleeding, prevention of recurrent episodes of nasal bleeding, complications of treatment modalities, and accuracy of diagnostic measures. This guideline addresses the diagnosis, treatment, and prevention of nosebleed. It focuses on nosebleeds that commonly present to clinicians via phone calls, office visits, and emergency room encounters. This guideline discusses first-line treatments such as nasal compression, application of vasoconstrictors, nasal packing, and nasal cautery. It also addresses more complex epistaxis management, which includes the use of endoscopic arterial ligation and interventional radiology procedures. Management options for 2 special groups of patients-patients with hereditary hemorrhagic telangiectasia syndrome and patients taking medications that inhibit coagulation and/or platelet function-are included in this guideline. This guideline is intended to focus on evidence-based quality improvement opportunities judged most important by the guideline development group. It is not intended to be a comprehensive, general guide for managing patients with nosebleed. In this context, the purpose is to define useful actions for clinicians, generalists, and specialists from a variety of disciplines to improve quality of care. Conversely, the statements in this guideline are not intended to limit or restrict care provided by clinicians based on their experience and assessment of individual patients.

Action statements: The guideline development group made recommendations for the following key action statements: (1) At the time of initial contact, the clinician should distinguish the nosebleed patient who requires prompt management from the patient who does not. (2) The clinician should treat active bleeding for patients in need of prompt management with firm sustained compression to the lower third of the nose, with or without the assistance of the patient or caregiver, for 5 minutes or longer. (3a) For patients in whom bleeding precludes identification of a bleeding site despite nasal compression, the clinician should treat ongoing active bleeding with nasal packing. (3b) The clinician should use resorbable packing for patients with a suspected bleeding disorder or for patients who are using anticoagulation or antiplatelet medications. (4) The clinician should educate the patient who undergoes nasal packing about the type of packing placed, timing of and plan for removal of packing (if not resorbable), postprocedure care, and any signs or symptoms that would warrant prompt reassessment. (5) The clinician should document factors that increase the frequency or severity of bleeding for any patient with a nosebleed, including personal or family history of bleeding disorders, use of anticoagulant or antiplatelet medications, or intranasal drug use. (6) The clinician should perform anterior rhinoscopy to identify a source of bleeding after removal of any blood clot (if present) for patients with nosebleeds. (7a) The clinician should perform, or should refer to a clinician who can perform, nasal endoscopy to identify the site of bleeding and guide further management in patients with recurrent nasal bleeding, despite prior treatment with packing or cautery, or with recurrent unilateral nasal bleeding. (8) The clinician should treat patients with an identified site of bleeding with an appropriate intervention, which may include one or more of the following: topical vasoconstrictors, nasal cautery, and moisturizing or lubricating agents. (9) When nasal cautery is chosen for treatment, the clinician should anesthetize the bleeding site and restrict application of cautery only to the active or suspected site(s) of bleeding. (10) The clinician should evaluate, or refer to a clinician who can evaluate, candidacy for surgical arterial ligation or endovascular embolization for patients with persistent or recurrent bleeding not controlled by packing or nasal cauterization. (11) In the absence of life-threatening bleeding, the clinician should initiate first-line treatments prior to transfusion, reversal of anticoagulation, or withdrawal of anticoagulation/antiplatelet medications for patients using these medications. (12) The clinician should assess, or refer to a specialist who can assess, the presence of nasal telangiectasias and/or oral mucosal telangiectasias in patients who have a history of recurrent bilateral nosebleeds or a family history of recurrent nosebleeds to diagnose hereditary hemorrhagic telangiectasia syndrome. (13) The clinician should educate patients with nosebleeds and their caregivers about preventive measures for nosebleeds, home treatment for nosebleeds, and indications to seek additional medical care. (14) The clinician or designee should document the outcome of intervention within 30 days or document transition of care in patients who had a nosebleed treated with nonresorbable packing, surgery, or arterial ligation/embolization. The policy level for the following recommendation, about examination of the nasal cavity and nasopharynx using nasal endoscopy, was an option: (7b) The clinician may perform, or may refer to a clinician who can perform, nasal endoscopy to examine the nasal cavity and nasopharynx in

patients with epistaxis that is difficult to control or when there is concern for unrecognized pathology contributing to epistaxis.

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4. Novel Tobacco Products Including Electronic Cigarette and Heated Tobacco Products Increase Risk of Allergic Rhinitis and Asthma in Adolescents: Analysis of Korean Youth Survey

Soo Jie Chung 1 2, Byung-Keun Kim 3, Ji Hyun Oh 4, Ji-Su Shim 5, Yoon-Seok Chang 1 6, Sang-Heon Cho 1 2, Min-Suk Yang 1 7

Abstract

Background: The effect of novel tobacco products, such as electronic cigarettes (EC) and heated tobacco products (HTP), on allergic rhinitis (AR) and asthma is not well known.

Objective: To evaluate the health effect of novel tobacco products on asthma and AR.

Methods: This study was conducted using large survey data on Korean middle and high school students. The relationship between current asthma/AR and novel tobacco products user status was evaluated. In order to compare the combined effects of conventional cigarette (CC), EC, and HTP use on current allergic diseases, the participants were classified into 18 groups based on CC (current, former, and never), EC (current, former, and never), and HTP (ever and never) status.

Results: A total of 60,040 participants representing 2,850,118 Korean adolescents were analyzed. Of all participants, 6.7%, 2.7%, and 2.9% were current CC, current EC, and ever HTP users, respectively. Current CC and ever HTP use was significantly associated with current asthma and AR in adjusted models. Current EC showed association with current AR but the association with asthma disappeared in the adjusted model. Among 18 groups, the groups including current CC use showed higher risk of current AR and asthma than never HTP-never EC-never CC group. The odds ratio of current asthma especially increased more in those who used EC and/or HTP with CC concurrently than those in the never HTP-never EC-current CC user group.

Conclusion: Using EC and/or HTP in adolescents might enhance the adverse effect of CC on AR and asthma

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5. Quality-of-life and Olfaction Changes Observed With Short-Term Medical Management of Chronic Rhinosinusitis

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Abstract

Background: Patients with chronic rhinosinusitis (CRS) commonly experience both reduced quality of life (QOL) and olfactory dysfunction (OD). Literature on the impacts of appropriate medical therapy (AMT) for CRS on QOL and OD is limited, and the focused design of these studies may limit their applicability to usual clinical practice.

Methods: Adults with symptomatic CRS were prospectively enrolled (November 2016 to October 2018) into an observational, multi-institutional study. Individualized AMT was initiated using standard practice according to evidence-based guidelines. Endoscopy examination (Lund-Kennedy), olfactory function (Sniffin' Sticks) testing, and QOL survey responses (22-item Sino-Nasal Outcome Test [SNOT-22], Questionnaire of Olfactory Disorders-Negative Statements [QOD-NS]) were obtained at enrollment and follow-up.

Results: Baseline measures demonstrated heterogeneity of QOL and OD. After an average of 7.8 weeks, within-subject median SNOT-22 total improved by 39.5% ($n = 39$, $p < 0.001$) relative to baseline, including 50% ($p = 0.014$) improvement for item #21, "Sense of smell/taste." QOD-NS improvement was also statistically significant ($p = 0.044$). Sniffin' Sticks score relative improvement of 10.9% ($n = 33$, $p = 0.109$) was not statistically significant and lacked correlation with SNOT-22 total scores ($R = -0.247$, $p = 0.165$) or QOD-NS total scores ($R = -0.016$, $p = 0.930$), but correlated moderately with endoscopy score ($R = -0.436$, $p = 0.018$).

Conclusions: Participants with varied impacts of CRS, treated with individualized short-term AMT, demonstrated significant improvements in CRS- and olfactory-specific QOL measures, without corresponding improvement in clinically measured olfactory function. Olfactory function changes moderately correlated with endoscopy score changes, but lacked an association with QOL measurements

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6. MR Findings of Fungus Ball: Significance of High Signal Intensity on T1-Weighted Images

Soo Chin Kim 1, Inseon Ryoo 2, Jae Min Shin 3, Sangil Suh 4, Hye Na Jung 4, Sung Ui Shin 1

Abstract

Background: Central dark-signal intensity with high-signal, hypertrophic mucosal wall of paranasal sinuses on T2-weighted images (T2WI) is a characteristic magnetic resonance imaging (MRI) feature of sinonasal fungus ball. However, this finding is usually interpreted as non-fungal chronic sinusitis with central normal sinus air. In addition, T1-weighted images (T1WI) and T2WI are basic sequences of all magnetic resonance (MR) examinations. Therefore, we evaluated the usefulness of T1WI for detecting fungus balls comparing with computed tomography (CT) findings and T2-weighted MRI findings.

Methods: This retrospective study was approved by the Institutional Review Board of Korea University Guro Hospital. Two reviewers assessed preoperative CT and MR images of 55 patients with pathologically confirmed fungus balls. Reviewers evaluated the presence and patterns of calcifications on CT. Overall signals and the presence and extent of certain signals of fungus balls on MRI were also assessed. The relationship between calcifications and MRI signals was also evaluated.

Results: Of the patients, 89.1% had calcifications on CT. All had dark signal portions with high signal, hypertrophic mucosal walls on T2WI. Most (92.7%) patients showed iso- to hyper-intense overall signals on T1WI and 89.1% had T1-weighted high signal portions on MRI. The presence, patterns, and location of calcifications had no significant correlation with T1-weighted high-signal intensity portion.

Conclusion: Fungus ball can be suggested by the presence of the hyper-signal intensity portions in the fungal mass on T1WI in conjunction with dark-signal lesions surrounded by high-signal, hypertrophic mucosal walls in paranasal sinuses on T2WI

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7. Frontal Sinus Osteoma: From Direct Excision to Endoscopic Removal

Yasiru G Karunaratne 1, Dakshika A Gunaratne 2, Peter Floros 3, Eugene H Wong 2, Narinder P Singh 2 4

Abstract

Frontal sinus osteomas are benign bone-forming neoplasms. Ongoing advancements in endoscopic surgery have allowed less invasive surgical approaches to be adopted for removal. The authors systematically reviewed the literature to provide analysis and recommendations for management.One hundred ninety-three publications encompassing 1399 patients met inclusion, with mean age 42.1 ± 13.8 years and a male predominance (59.2%). Symptoms included pain (70.8%); orbital/ocular (20.7%); sinonasal (36.4%); neurologic (6.0%); other (14.5%); and asymptomatic (4.8%). Osteoma was isolated to the frontal sinus (82.9%) or extended into the ethmoid (16.6%), maxillary (0.3%), and sphenoid sinuses (0.2%). There was intracranial extension in 9.5% and intraorbital extension in 18.7%. Of those proceeding to surgery, majority (59.8%) underwent open approaches, followed by endoscopic (25.0%) and combined (11.5%). A significant ($P < 0.01$) increase in proportion of cases utilizing endoscopic approaches versus open/combined was observed over the period studied. Seventy-one postoperative complications were reported, in 7.5% of endoscopic cases, 27% of open, and 8.8% of combined. Complications were more likely in open/combined surgery, compared with endoscopic (22.3% versus 7.5%, $P < 0.001$). In 181 patients, completeness of resection was reported (complete resection; 87.8%) and found to be a significant predictor ($P < 0.01$) for disease recurrence/progression. Mean length of stay for the endoscopic group was 3.1 ± 1.3 days, compared with 7.9 ± 3.1 for open/combined ($P < 0.0001$).In the management of frontal sinus osteoma, indications for selecting endoscopic versus open approaches have expanded over the past 30 years, as techniques, equipment, and understanding of pathophysiology have evolved. Where endoscopic approaches are possible, they are associated with reduced morbidity and length of stay compared with open approaches

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8. Sirolimus for the Treatment of Juvenile Nasopharyngeal Angiofibroma

Karen S Fernández 1, Alessandro de Alarcon 2, Denise M Adams 3, Adrienne M Hammill 4

Abstract

Juvenile nasopharyngeal angiofibroma (JNA) is a pathologically benign yet locally aggressive and destructive tumor that develops in the choana and nasopharynx. Historical treatment of JNA has included embolization, surgical resection, and radiation. Here, we describe three patients who received therapy with the mTOR inhibitor sirolimus with improvement in clinical symptoms, imaging, and overall well-being

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9. Sinonasal Inverted Papilloma: Efficacy of Demucosation to Reduce Recurrence After Surgical Managements

Masafumi Ohki 1, Shigeru Kikuchi 1

Abstract

To compare the outcomes of various surgical approaches to resect sinonasal inverted papilloma and to discuss their advantages and disadvantages. A retrospective chart review of 61 consecutive patients with sinonasal inverted papilloma was performed. Surgical treatment included non-demucosation endoscopic sinus surgery (ESS), demucosation ESS, endonasal medial maxillectomy (EMM), Draf type 3, Caldwell-Luc surgery, Denker, Killian, and lateral rhinotomy. Recurrence rates were compared between endonasal and external approaches and between demucosation and non-demucosation. After the first curative surgery, the non-demucosation ESS, endonasal demucosation (demucosation ESS, EMM, and Draf type 3), and external surgery showed recurrence rates of 61.5%, (8/13), 0.0% (0/21), and 7.4% (2/27), respectively. A significantly lower recurrence rate was observed in the endonasal demucosation ($p < 0.001$) and in the demucosation ESS group ($p < 0.001$) in comparison with the non-demucosation ESS. However, as for recurrence rate, no statistically significant difference was observed between endonasal surgery and external surgery ($p = 0.162$). Demucosation is a better strategy for the treatment of inverted papilloma than is non-demucosation. Demucosation is the key procedure for preventing recurrence

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10. Endoscopic Resection of Sinonasal Malignancies

Ahmed S Abdelmeguid 1 2, Shaan M Raza 3, Shirley Y Su 1, Michael Kupferman 1, Dianna Roberts 1, Franco DeMonte 3, Ehab Y Hanna 1

Abstract

Background: In this study, we evaluate our experience and the outcomes of patients with sinonasal cancer treated with endoscopic resection.

Methods: Retrospective review of patients with sinonasal cancer who had endoscopic resection was conducted. The outcomes of interest included survival outcomes and surgical complications.

Results: Overall, 239 patients were included. Median follow up time was 46.6 months. Of the 239 patients, 167 (70%) had a pure endonasal endoscopic approach, while 72 (30%) had an endoscopic-assisted approach. Postoperative cerebrospinal fluid (CSF) leakage occurred in 14 patients (5.9%). Negative margins were achieved in 209 patients (87.4%). There was no significant difference in the margin status between the pure endoscopic and endoscopic-assisted group (P = .682). There was no significant difference in the survival outcomes between both the groups.

Conclusion: Our data suggest that in properly selected patients, endoscopic approaches have acceptable morbidity with low complication rates and can provide an oncologically sound alterative to open approaches.

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