Reader Digest
Digested by Dr. Tarek Kandil, MD. Consultant, Students Hospital, Cairo University

1. Breath powered nasal delivery: a new route to rapid headache relief.

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Abstract

The nose offers an attractive noninvasive alternative for drug delivery. Nasal anatomy, with a large mucosal surface area and high vascularity, allows for rapid systemic absorption and other potential benefits. However, the complex nasal geometry, including the narrow anterior valve, poses a serious challenge to efficient drug delivery. This barrier, plus the inherent limitations of traditional nasal delivery mechanisms, has precluded achievement of the full potential of nasal delivery. Breath Powered bi-directional delivery, a simple but novel nasal delivery mechanism, overcomes these barriers. This innovative mechanism has now been applied to the delivery of sumatriptan. Multiple studies of drug deposition, including comparisons of traditional nasal sprays to Breath Powered delivery, demonstrate significantly improved deposition to superior and posterior intranasal target sites beyond the nasal valve. Pharmacokinetic studies in both healthy subjects and migraineurs suggest that improved deposition of sumatriptan translates into improved absorption and pharmacokinetics. Importantly, the absorption profile is shifted toward a more pronounced early peak, representing nasal absorption, with a reduced late peak, representing predominantly gastrointestinal (GI) absorption. The flattening and "spreading out" of the GI peak appears more pronounced in migraine sufferers than healthy volunteers, likely reflecting impaired GI absorption described in migraineurs. In replicated clinical trials, Breath Powered delivery of low-dose sumatriptan was well accepted and well tolerated by patients, and onset of pain relief was faster than generally reported in previous trials with noninjectable triptans. Interestingly, Breath Powered delivery also allows for the potential of headache-targeted medications to be better delivered to the trigeminal nerve and the sphenopalatine ganglion, potentially improving treatment of various types of headache. In brief, Breath Powered bi-directional intranasal delivery offers a new and more efficient mechanism for nasal drug delivery, providing an attractive option for improved treatment of headaches by enabling or enhancing the benefits of current and future headache therapies.

Headache. 2013 Sep;53 Suppl 2:72-84

2. Computed tomography evaluation of the sphenoid sinus and the vidian canal.

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Abstract

OBJECTIVES:

To understand the relationship between the vidian canal and surrounding structures of the sphenoid sinus, and to discover factors related to the formation of various canal corpus types using preoperative computed tomography (CT).

METHODS:

This retrospective study included 265 patients with 570 sides of identifiable vidian canal. All patients underwent paranasal sinus CT with 3-mm contiguous coronal and axial sections. Subsequently, the relationships amongst the different canal corpus types, pneumatization of the pterygoid recesses, morphometric parameters, and surrounding anatomical landmarks were investigated.

RESULTS:

Dehiscence of the bony roof of the canal was much more commonly seen in canal corpus types 2 and 3 than type 1 ($p < 0.001$). The presence of pterygoid recess pneumatization was more commonly seen in canal corpus types 2 and 3. More extensive pneumatization of the pterygoid recess was associated with a greater distance from the canal to the foramen rotundum ($p < 0.001$), but there were no significant differences in the distance from the vidian canal to the vomerine crest ($p = 0.465$).

CONCLUSION:

Pterygoid recess pneumatization might alter the position of the vidian canal relative to the sphenoid corpus and the distance to the foramen rotundum, but not the distance to the vomerine crest. Therefore, analyzing the canal corpus type and pneumatization of the pterygoid recess may play a key role when choosing a surgical approach in endoscopic vidian neurectomy.

B-ENT. 2013;9(2):117-21

3. Thirty minute-exposure to aged cigarette smoke increases nasal congestion in nonsmokers.

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Abstract

The aim of this study was to assess the effects of short exposures to experimentally aged cigarette smoke on the nose and upper airways. This crossover study compared the effects of 30-min exposures to (1) experimentally aged cigarette smoke at 1 mg/m³ particulate matter (PM)/14 ppm carbon monoxide (CO) and (2) conditioned filtered air on urinary metabolites of nicotine and tobacco-specific nitrosamines. Subjective nasal symptoms were assessed by questionnaire, objective nasal congestion was assessed by anterior rhinomanometry and nasal nitric oxide (NO) concentrations were determined. Experimentally aged cigarette smoke is a validated model for secondhand smoke (SHS). Twenty-six healthy nonsmokers (10 normal, 7 atopic/nonrhinitic, 7 atopic rhinitic, 2 nonatopic/rhinitic) were studied. A 30-min exposure to SHS increased nasal resistance in healthy nonsmokers. The rise in nasal resistance was most pronounced in rhinitic subjects. Significant increases were not noted when atopic subjects were considered independent of rhinitis status. Secondhand smoke exposure also elevated subjective nasal symptoms and urinary concentrations of metabolites of nicotine (cotinine and trans-3´-hydroxycotinine) and tobacco-specific nitrosamines [(4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol (NNAL)] in all subgroups of subjects. Exposure-related, subjective nasal symptoms were significantly higher in rhinitic than in normal subjects. Significant changes in nasal NO concentrations were not detected. Data indicate a 30-min exposure to secondhand smoke at 1 mg/m³ PM increases subjective upper respiratory symptoms, increases urinary cotinine and NNAL, and produces objective nasal airflow obstruction in human subjects.

J Toxicol Environ Health A. 2013;76(10):601-13

4. Hemostatic absorbable gel matrix for severe post-traumatic epistaxis.

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Abstract

INTRODUCTION:

The management of traumatic epistaxis is an important issue for maxillofacial trauma patients, because of their frequency and severity. We assessed a single use sterile hemostatic gel matrix (surgiflo© [SF], Floseal © [FS]) available for this indication.

MATERIALS AND METHODS:

Ten patients were managed between 2008 and 2012 by the same surgeon. The following data was documented for each patient: gender, age, mechanism of trauma or type of surgery, characteristics of epistaxis, the various hemostatic techniques used before using SF, and its effectiveness. The primary endpoint was SF effectiveness compared with usual techniques. The secondary endpoint was the evaluation of patient comfort compared to other hemostatic methods, using a visual analogue scale (VAS).

RESULTS:

In nine out of ten cases, epistaxis was controlled after endonasal instillation of SF after failure of wicking, or double balloon catheter in first line treatment, or use of SF directly as first line treatment. The mean post procedure VAS was: 7/10 for wicking (eight patients), 9.3/10 for the double balloon catheter (three patients), 3.2/10 for SF (ten patients).

DISCUSSION:

Our study highlights the effectiveness of hemostatic gel matrix in the management of post-traumatic epistaxis compared to usual methods. It also pointed out better patient comfort. A prospective comparative study on a larger cohort of patient would support the legitimacy of SF as first-line treatment for severe posttraumatic epistaxis.

Rev Stomatol Chir Maxillofac Chir Orale. 2013 Sep 9

5. Clinical and radiologic findings in a case series of maxillary sinusitis of dental origin

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Abstract

BACKGROUND:

Maxillary sinusitis of dental origin (MSDO) has been described for decades, but tends to be overlooked as a possible cause of chronic sinusitis by both clinicians and radiologists. The incidence of MSDO in published series is reported to be from 10% to 40% in bacterial sinusitis. We present this series to highlight clinical and radiologic indicators of MSDO.

METHODS:

Databases from the authors' otolaryngology and endodontic practices were reviewed to identify patients who had been seen mutually. Sixty-seven (67) patients were identified. Both authors then reviewed the clinical records and associated computed tomography (CT) scans and determined that 31 patients had MSDO and 2 of had bilateral MSDO, for a total of 33 cases. The clinical and radiologic features related to these cases were then tabulated.

RESULTS:

The clinical characteristics of the 33 cases of MSDO were as follows: sinus pain (88%), postnasal drainage (64%), congestion (45%), maxillary toothache (39%), and foul drainage (15%). Radiographic CT findings of MSDO showed periapical abscess in 18 cases (55%), periodontal abscess in 3 cases (9%), and no obvious dental pathology in 12 cases (36%). The extent of associated sinusitis was variable from mucoperiosteal thickening to florid unilateral sinusitis involving multiple sinuses. Eighteen maxillary sinuses (55%) were found to have either patent maxillary infundibula or prior surgical antrostomy. Twenty-four patients (77%) had unilateral maxillary sinus disease.

CONCLUSION:

MSDO should be considered highly likely when radiographic evidence of dental pathology is associated with maxillary sinus disease. Regardless of negative CT evidence of dental pathology, MSDO should be suspected when unilateral maxillary sinus disease is seen, particularly when associated with a patent infundibulum. When MSDO is suspected, a clinical endodontic examination should be performed to rule out or treat an odontogenic etiology.

Int Forum Allergy Rhinol. 2013 Aug 27

6. Acetaminophen and/or antibiotic use in early life and the development of childhood allergic diseases.

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Abstract

BACKGROUND:

Our understanding of whether the use of acetaminophen and/or antibiotics in early life can cause allergic diseases in later childhood remains inconclusive. The objective of this study was to investigate the temporal relationship between exposure to acetaminophen and/or antibiotics in early life and the development of allergic diseases in later childhood, using two independent birth cohorts derived from the National Health Insurance Research Database (NHIRD) in Taiwan.

METHODS:

The authors conducted a prospective birth cohort study of 263 620 children born in 1998 and 9910 children born in 2003, separately, from the NHIRD. Exposure status of acetaminophen and/or antibiotics and potential confounding factors were included in the analyses. Cox proportional hazards models were applied to determine the temporal relationship between acetaminophen and/or antibiotic exposure and the development of allergic diseases.

RESULTS:

We observed a positive relationship between acetaminophen and/or antibiotic exposure during the 1st year of life and the subsequent development of the three examined allergic diseases (atopic dermatitis, asthma and allergic rhinitis) in the 1998 birth cohort, but the observed relationship of drug exposure in the 2003 cohort, especially for atopic dermatitis and asthma, was lower than for those in the 1998 cohort and was not statistically significant.

CONCLUSIONS:

Our findings provide suggestive evidence that the temporal effect of exposure to acetaminophen and/or antibiotics influences the development of common allergic diseases in later childhood. Further functional studies and/or animal studies are needed to better understand the underlying regulatory mechanisms driving this important clinical and public health issue.

Int J Epidemiol. 2013 Aug;42(4):1087-1099

7. Histopathological study of lesions of nose and paranasal sinuses.

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Abstract

(1) To study the incidence of benign and malignant lesions of nose and paranasal sinuses (PNS). (2) To study various lesions in reference to sex differences and symptomatology. (3) To compare the findings of the study with other authors. The study was conducted over a period of 7 years both retrospectively and prospectively. The formalin fixed specimens were received with complete clinical and radiological features. Routine gross examination and required number of sections were taken and stained with hematoxylin and eosin. Periodic acid Schiffs and reticulin stains were used wherever necessary. The incidence of lesions in nasal cavity (NC) and PNS was 16.71 cases per year, non-neoplastic lesions constituted 86% of these cases and their incidence was 14.42% and neoplastic lesions constituted 12%. All the cases were carefully examined histopathologically and it was found that the region was affected by variety of lesions. Among 117 cases, 101 were non-neoplastic and 16 were neoplastic. The commonest site was NC, followed by PNS. They occur commonly in second and third decades with predominance in males. Amongst the non-inflammatory lesion, nasal polyp is the commonest lesion followed by rhinoscleroma and rhinosporidiosis. The common age group is second and third decades, with male predominance. Amongst benign neoplastic lesions capillary haemangioma was common followed by inverted papilloma. The common age group is second and third decades, with male predominance. Malignant lesions were comparatively less to that of benign lesions.

Indian J Otolaryngol Head Neck Surg. 2012 Sep;64(3):275-9

8. Initial experiences with endoscopic rhino-neurosurgery in Amsterdam

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Abstract

Endoscopic surgery of the skull base has been on the rise for several years. Endoscopic access for surgery can be achieved from the frontal sinus anteriorly along the skull base to the odontoid process posterior inferiorly. An endoscope is inserted through one nasal corridor and allows visualization of the working field and up to three surgical instruments can be used to address the lesion. This is called the "two nostrils-four hands technique". This is a retrospective study of 67 cases. Setting of the study is an Amsterdam University hospital. Cases were identified in the department of otorhinolaryngology and department of neurosurgery database. All patients operated between 1 January, 2008 and 1 February, 2012 with pituitary tumours that extend beyond the sella, sinonasal tumours and all non-pituitary skull-base tumours were included. Mean tumour diameter was 3.8 cm. We performed a near-to-gross total resection in 92 % of cases where we intended to perform a total resection. The most frequent complication was CSF leakage. This study demonstrates that this technique is safe and reliable. What is needed is a dedicated team, which includes a dedicated anesthesiologist, endocrinologist, ophthalmologist, and radiation oncologist.

Eur Arch Otorhinolaryngol. 2013 Sep 25.

9. Sinonasal Tract and Nasopharyngeal Adenoid Cystic Carcinoma: A Clinicopathologic and Immunophenotypic Study of 86 Cases.

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Abstract

Primary sinonasal tract and nasopharyngeal adenoid cystic carcinomas (STACC) are uncommon tumors that are frequently misclassified, resulting in inappropriate clinical management. Eighty-six cases of STACC included 45 females and 41 males, aged 12-

91 years (mean 54.4 years). Patients presented most frequently with obstructive symptoms (n = 54), followed by epistaxis (n = 23), auditory symptoms (n = 12), nerve symptoms (n = 11), nasal discharge (n = 11), and/or visual symptoms (n = 10), present for a mean of 18.2 months. The tumors involved the nasal cavity alone (n = 25), nasopharynx alone (n = 13), maxillary sinus alone (n = 4), or a combination of the nasal cavity and paranasal sinuses (n = 44), with a mean size of 3.7 cm. Patients presented equally between low and high stage disease: stage I and II (n = 42) or stage III and IV (n = 44) disease. Histologically, the tumors were invasive (bone: n = 66; neural: n = 47; lymphovascular: n = 33), composed of a variety of growth patterns, including cribriform (n = 33), tubular (n = 16), and solid (n = 9), although frequently a combination of these patterns was seen within a single tumor. Pleomorphism was mild with an intermediate N:C ratio in cells containing hyperchromatic nuclei. Reduplicated basement membrane and glycosaminoglycan material was commonly seen. Necrosis (n = 16) and atypical mitotic figures (n = 11) were infrequently present. Pleomorphic adenoma was present in 9 cases; de-differentiation was seen in two patients. Immunohistochemical studies showed positive reactions for pan-cytokeratin, CK7, CK5/6, CAM5.2, and EMA, with myoepithelial reactivity with SMA, p63, calponin, S100 protein and SMMHC. CD117, CEA, GFAP and p16 were variably present. CK20 and HR HPV were negative. STACC needs to be considered in the differential diagnosis of most sinonasal malignancies, particularly poorly differentiated carcinoma, olfactory neuroblastoma and pleomorphic adenoma. Surgery (n = 82), often accompanied by radiation therapy (n = 36), was generally employed. A majority of patients developed a recurrence (n = 52) 2-144 months after initial presentation. Overall mean follow-up was 19.4 years (range 0.4-37.5 years): 46 patients died with disease (mean 6.4 years); 5 were alive with disease (mean 5.4 years), and 35 patients were either alive or had died of unrelated causes (mean 16.3 years). ACC of the SNT is uncommon. Recurrences are common. The following parameters, when present, suggest an increased incidence of either recurrence or dying with disease: mixed site of involvement, high stage disease (stage IV), skull base involvement, tumor recurrence, a solid histology, perineural invasion, bone invasion, and lymphovascular invasion.

Head Neck Pathol. 2013 Sep 15

10. The impact and prospect of traumatic brain injury on olfactory function: a cross-sectional and prospective study.

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Abstract

Traumatic brain injury (TBI) can cause olfactory loss. The aim of this cross-sectional and prospective study was to determine the prevalence of olfactory loss among 110 patients with TBI within 3 months after the trauma. In 81 patients ("cross-sectional"-group), olfactory function could be measured using the validated "Sniffin' Sticks" test for odor threshold and odor identification. In addition, the prospective change of olfactory function was studied in 36 patients ("follow-up"-group) by means of a validated odor threshold, discrimination and identification test. Olfactory function was significantly better in patients with TBI I° compared to individuals with TBI II° and III°. Clinically significant improvement of olfactory function was found in 36 % of the patients, most frequently during the first 6 months after the injury, in a median follow-up interval of 21 months. TBI I° has in general no major effect on olfaction. In contrast, patients with TBI II° and III° exhibit smell loss in 57 %. Chances for olfactory recovery were highest within the first 6 months after the trauma.

Eur Arch Otorhinolaryngol. 2013 Sep 27.