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Rhinogenic headache: A frequent cause of misdiagnosis
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Introduction
Despite being a common term, "sinus headache" is often a misdiagnosis, the more accurate description is rhinogenic headache. Rhinogenic headache is a distinct type of headache that has been receiving an increased amount of attention over the past years, ever since it was first coined by Sludder in the early 1900s as a headache caused by contact points between different structures in the nasal cavity. [1,2]

These contact points exist due to nasal septal deviation that causes disturbance in the airways resulting in dryness, crusting and dysplastic changes in the parts of the mucosa where the airflow has increased. These contact points may disable the mucosal ciliary activity thus, preventing mucosal drainage from the paranasal sinuses and hence, may cause an accumulation of secretion in the sinuses. [3]

The international Headache Society has defined that rhinogenic headaches are attributed to the pressure of the contact points, such as nasal septum and superior turbinate, or middle turbinate with the inner walls of the ethmoid sinus. [3] These headaches are frequent localized headaches particularly in the periorbital region, inner wall of the eye, temporal region, forehead and upper jaw. [4] It has been proven to be difficult to differentiate between the headaches of rhinogenic origin and of rhino sinusitis. Acute rhino sinusitis is often characterised by purulent discharge in the nasal passages and a pain profile determined by the site of infection. [5] If a complete medical history, nasoendoscopic and radiologic findings do not indicate the presence of diseases of the mucous membranes in the paranasal sinus it can be assumed that the headache can be a result of contacts and pressures between the adjacent mucosal surface in the nasal cavity due to anatomical variations. [5]

Case Report
A 59 year old woman presented with a persistent dull headache affecting the frontal part of the face and radiates towards the vertex of the head. She has been having this pain for the past 42 years of her life. Her pain was accentuated by pressure build up whenever she sneezes. There were some persistent left sided nasal obstruction and persistent rhinorrhoea for many years with post nasal drip. There were no complains of anosmia or hyposmia and nor were there any fever or purulent nasal discharge. The patient was treated empirically for rhinosinusitis, allergic rhinitis and vertigo throughout the years after investigations performed including computed tomographic (CT) scanning were not conclusive. Upon further questioning recently, she has admitted to previous history of trauma where a coconut had fallen on her head and bridge of her nose at the age of 17 years. She was treated at a district hospital for a concussion and was discharged the next day. On nasoendoscopic examination both inferior turbinates were hypertrophied with a deviated nasal septum to the left (Fig. 1). The left middle turbinate and the left inferior turbinate were in contact with the nasal septum. CT of paranasal sinus showed a deviated septum to the left without any rhinosinusitis changes (Fig. 2). Other examinations were unremarkable. She was counselled for septoplasty but she refused. She was referred to the neuromedical department for a trial of gabapentin and other medications.
Discussion

The criteria for rhinogenic headache remains vague and uncertain which makes the diagnosis difficult. [6] Classical headache diagnosis may be obvious such as tension headache, migraine and acute sinusitis. However there are less obvious aetiologies that are more obscure in nature that require proper diagnosis. [7] The International Headache Society, an international multidisciplinary body has compiled the diagnostic criteria for types of headache and that even includes rhinogenic headache. Among the types of headaches discussed in relation to rhinogenic headache were; migraines, tension headaches, and cluster headaches. [8]

The exact cause of migraine is unclear although vascular, neurogenic and other mechanisms have been proposed. Pain is typically unilateral, moderate or severe, pulsating in quality and associated with light or sound sensitivity. Tension headaches are the most common type of headache. Its typical features include bilateral pain, infrequent headache episodes lasting from minutes to days. It is often mild to moderate pain or pressure of squeezing in nature. Cluster headaches are acute attacks of headaches that occur in a series lasting from few weeks to months. They can be triggered by irritants such as alcohol, histamine and nitroglycerine. Typical features include orbital, supraorbital or temporal pain. [8,9]

The American Academy of Otolaryngology / Head and Neck Surgery (AAO/HNS) has created a diagnostic criteria for acute rhinosinusitis. [10] The diagnosis requires two major criteria or one major criteria with two minor criteria. Headache has been identified as a minor criteria for diagnosis. In addition, The AAO/HNS does not recognize headache as a feature of chronic rhinosinusitis. Rhinogenic headache is a headache or facial pain syndrome due to mucosal contact points in the nasal or sinus cavities in the absence of inflammatory sino-nasal, purulent discharge, sino-nasal polyps, mass or hyperplastic mucosa. It has also been known under many other names as rhinopathic headache, sinogenic headache, middle turbinate headache, nasal spur headache, sinus headache, contact point headache and Sludder’s headache. Rhinogenic headache is characterised by localised intermittent pain in the periobital and medial canthus or temporozygomatic regions of the face with clinical, nasal endoscopic evidence or CT evidence of mucosal contact points without acute rhinosinusitis. This pain must correspond to the gravitational variation in mucosal congestion as patient goes from upright to supine and the absence of pain in 5 minutes after topical application of local anaesthesia to the contact points.

The knowledge of the nervous supply to the face and nose is of utmost importance in understanding the mechanism of rhinogenic headache. The nasociliary nerve is a main branch of the ophthalmic nerve. It divides into the anterior and posterior ethmoidal nerves. The anterior superior part of the septum is supplied by the anterior ethmoidal nerve. The nasopalatine nerve supplies the bulk of the bony septum. The infraorbital nerve which is also a branch of the maxillary nerve supplies sensory innervation to the lateral part of the nose. The fact that there are a lot of nerve supplying the nose runs in close proximity to each other suggests that the pain elicited by the contact point may cause non-specific facial pain. [9] Furthermore, the ophthalmic nerve also innervates the dura, thus this mechanism may also involve referred pain as well.

Neuropeptides and substance P are involved in the mediation of facial pain due to the contact between the mucosal surfaces. [5] Substance P is stored in localised sensory C-fibres in the mucosa. Local substance P may cause vasodilation and hypersecretion while the release of substance P in the body may cause referred pain. [5,11] Substance P also causes plasma extravasation, histamine release and other inflammatory events. These systemic vascular phenomena may be responsible for migraine-like headache symptoms.

The key to diagnosis is the pain location to the nose and the recognition of the extensive nervous system supply to the nose. Rhinogenic headache is often a missed diagnosis, as often other literature has stated that it should remain a diagnosis of exclusion. Diagnosing headaches from mucosal contact points require CT, endoscopy and not forgetting a proper medical history. We report this case to highlight the importance of proper diagnosis of rhinogenic headache as our patient had been improperly treated with the wrong diagnosis throughout the years. Therefore, recognizing the rhinogenic headache is essential to avoid unnecessary medications and hospital visit.

All authors declared no conflict of interest.

References


