Sinusitis in self-described and physician diagnosed patients as sinus headache.

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Abstract:

To know the percentage of sinusitis among patients with self-described and physician diagnosed as sinus headache, and differentiated from other causes of headache . A prospective study on 500 patients with headache presented with self-described or physician diagnosed as sinusitis, during three years period (2008 - 2010) at salah-ELdin governorate. A detailed history about the pain and associated nasal symptoms was taken. Anterior rhinoscopy , oropharyngeal and neck examinations, sinus X-ray occipito-mental view for signs of sinus infection was done. The International Headache Society (IHS) diagnostic criteria applied for diagnosis of the headache. Thirty patients (6%) were having sinusitis, 24 patients (8%) from patients presented with physician diagnosed, and 6 patients (3%) from patients with self described sinusitis. Migraine was found in 380 patients(76%),Tension-type headache in 70 patients (16%), other secondary headache was (1.6%). cluster headache was (0.8%). Four patients (13%) with sinusitis were found associated other causes of headache. Sinusitis is often over diagnosed. The presence of pain at site of paranasal sinuses, with nasal or ocular symptoms should not immediately diagnosed as sinusitis, Migraine should be excluded. The purulent nasal discharge, and positive radiological findings are important for diagnosis of sinusitis.

Key wards: Headache, Sinusitis, Migraine, Tension-Type headache.

Introduction

Headache accounts for 4.4% of consultation in primary care(6.4% female and 2.5% male)1.Sinus headache is widely accepted clinical diagnosis, although many medical specialists consider it an uncommon cause of recurrent headache2.

The symptoms of the sinus headache may be same as that of other headache, pain in the head, facial pain around the eye, nose and the forehead. Therefore the otolaryngologists and practitioners must have a thorough understanding of headache and how symptmatology may or may not relate to the sinuses3. The patient may be diagnosed for the sinus headache while the symptoms might be pointing to migraine headache4, Tension-type headache3, cluster headache, or secondary causes of the headache.

The history is a crucial step in the correct diagnosis, and the presence of warning symptoms in the history and or physical sign on examination call for investigations and may indicate appropriate specialist referral1.The headache specialists consider sinus headache to be relatively rare, even when there is demonstrable noninfectious sinus inflammation6, and unless a correct diagnosis is made ,it is not possible to provide the most effective treatment 1.

Patients & Methods

A prospective study on 500 patients with headache presented to the author with self-described or physician (mostly general practitioner)diagnosed as sinusitis, during three years from Jan.2008-Dec. 2010, at Salah-ELdin governorate .Detailed history was taken about the pain includes

location(unilateral ,bilateral, temporal, frontal, occipital, cervical, ocular, cheek), duration and frequency, intensity (mild, moderate, sever),and character(Dull, pulsating, nonpulsatin, tightness,---), radiation, aggravating and relieving factors, associated nausea ,vomiting, photophobia, phonophobia. Any associated nasal symptoms like nasal obstruction, nasal discharge, decrease sense of smell and taste .Cough ,halitosis, and fever. Physical examination (including anterior rhinoscopy and oropharyngeal and neck examination). Sinus X-ray occipito-mental view was done for all patients for sign of infection like mucosal thickening, air-fluid level, complete opacity .Computed tomography was done for selected patients for further evaluation when needed, to proof or exclude sinus infection. The diagnosis of sinusitis was made according to the classification of International Headache Society(IHS) diagnostic criteria Headache attributed to rhinosinusitis(Table 1).).The patients with sinusitis was given appropriate treatment(medical, and surgical when indicated), and followed up for resolution of symptoms and radiological signs for sinusitis, and for any other associated causes of headache.

Results

Patients presented with self-describe or physician diagnosed as sinus headache were 500 patient .Age from 6 year to 62 years,(mean age was 26 year) .290 patients (58%) were female, and 210 patients (42%) were male(Table 2).Only 30 patients(6%) having meet the International Headache Society(lHS) criteria for sinusitis at presentation. Patients thinking having sinusitis(Self –described) were 190 patients (38%),(6 patients (3%) were having sinusitis),and patients with Physician (commonly practitioner) diagnosed as sinusitis were 310 patients (62%),(24 patients(8%) were having sinusitis)(Figure 1). Patients meet IHS criteria for migraine –type headache(Table 4) were 380 patients(76%)(Figure 2){100 patients (27%) with aura, and 280 patients (73%) without aura.}.

Migraine common in female were 225 patients (59%),155 patients(41%) were male. Main age group affected was (21-30 year)were 195 patients(51%). Patients meet International Headache Society(HIS) criteria for Tension-type headache(Table 4) were 70 patients(16%)(Figure 2), common in female were 40 patients (57%),more in the age group (31-40year) were 23 patients (33%),then age group (41-50 years) were 20 patients (29%). Cluster headache were 4 patients(0.8%),all were male (Table 2). Secondary headache were 16 patients(3.2%).{ Dental and Temporo- mandibular joint disorders were 8 patients(1.6%), sluder neuralgia(contact point headache)were 3 patients(0.6%), (Two due to large bulla conchosa, one due to high septal deviation)the pain relieved after surgical correction , one case(0.2%) were trigeminal neuralgia ,one case(0.2%) was meningitis,3 patients (0.6%) were unclassified}(Table1). Common age group presented was (21-30 year) 230 patients(46%),then (31-40 year) were112 patients(22%) (Table3).

Follow up of the patients with sinusitis all recovered, 22 patients(73%) recovered by medical treatment,13 patients needs antral washout. Eight patients(27%) needs surgical interference under general anesthesia including inferior meatal antrostomy with septoplasty. intranasal polypectomy, Submucosal diathermy, partial turbinectomy, and other procedures tailored according to the indication.

Four patients (13%) with sinusitis presented again with headache after period of time, the clinical examinations and sinus X-Ray proved recovery from sinusitis, but the causes of headache were migraine in three patients, and one patient having cluster headache.

Discusion

The otolaryngologists frequently see patients with the symptom of headache, the majority of patients who believe they have sinus headache, or diagnosed by physicians having sinusitis, are not true 3.

When the patient presented with head ache as the major symptom, it is uncommon for the problem to be sinus related unless other nasal symptoms like purulent nasal discharge, post nasal drainage ,nasal obstruction, nasal congestion, change in sense of taste or smell, as the headache is a minor symptom for sinusitis according to the American Academy of Otolaryngology-Head and Neck Surgery Criteria. For diagnosis of Rhinosinusitis 9 .(Table 5). The International Headache Society (IHS) further states that chronic sinusitis is not validated as a cause of headache or facial pain unless it relapses in to acute phase9.Other stated that the headache may also be a feature of chronic sinusitis, usually characterized as a dull ache or feeling of fullness, starts in the morning, then lasts until late in the afternoon10. sinusitis may associated with other causes of headache like migraine, cluster headache. Four patients (13%) of our cases with sinusitis, three patients having migraine and one patient cluster headache.

The allergists and neurologist contend that sinus headache is rare even among patients with sinus infection11.

In our study 30 patients (6%) of those presented with self-describe or physician diagnosed as sinus headache having true sinusitis. Eross EJ et al. study a 100 patients older than 18 years who believed they had sinus headache 3% with headache secondary to rhinosinusitis11.

Migraine is commonly misdiagnosed as sinus headache12.This study found that migraine was the commonest diagnosis 380 patients (76%). Perry et al. found Migraine is the most common diagnosis (58%) in patients with headache who are referred for sinus evaluation and are found to show no evidence of rhinosinusitis on CT of the sinuses or endoscopic examination 4. Eross EJ et al. was found that 63% were diagnosed having migraine11.Curtis P.Schreiber et al. in their study ,80% of patients with a history of "sinus" headache were determined to have migraine-type headache, more in women 12.

Study involve 3000 patients complaint of sinus headache, found 88%of patients were having migraine and not sinus headache13 .Teri Robert Study finds 97% of self-described sinus headaches were actually migraine attacks14.

The cranial autonomic symptoms of migraine like nasal congestion, rhinorrhea, eyelid edema, conjunctival injection, and lacrimation,were found in patients with migraine in different percentages 45%(2),50%(15), 75%(13). according to different studies .. The sinus –like symptoms like sinus pressure, sinus pain, nasal congestion, runny nose, watery eyes, and itchy nose are features of migraine 11.

Although the genesis of migraine attack is still debated, the pain result of sensitization of peripheral trigeminal afferents and central sensitization of trigeminovascular neurons16.The

pathophysiologically it is felt that the involvement of the first division(ophthalmic) of the trigeminal nerve is responsible for the pain of migraine headache. The second division(maxillary) mediate problems with the nasal passages. this division of trigeminal nerve is responsible for the innervations of the sinusoidal vessels in the nasal passages; so it may also be able to initiate a peripheral response leading to an inflammatory response in the nasal passages this may be the sinus presentation of migraine headache16.So head ache associated with rhinogenic symptoms is a diagnostic dilemma that physicians commonly confront14,as 42 % of patients with migraine reported a physician diagnosis as sinus headache17.

.Most migraine sufferers are young adults, and women have migraine headache three times than men. migraine headaches tend to diminish by the fifth or sixth decade of life3.

The pain in Tension-Type headache(formerly called muscle contraction headache) is muscular in origin and related to the increased resting muscle tension of the pericranial muscles18. some believed this entity to be due to psychologic tension8, triggered by stress, anxiety ,and cervical spine disorder, and temporomandibular joint disorders, and some occupational situations3.

The prevalence rates of tension-type headaches vary among studies from 29%_71%of patients, because of differences in research study design 19.Curtis P.Schreiber et al. 8% of patients with a history of "sinus" headache were determined to have Tension-Type headache, more in women11.

The pain in tension-type headache is mild to moderately intense and is described as tightness, pressure, or a dull ache. The pain is usually experienced as a band extending bilaterally back from the forehead to the occiput even to the posterior neck muscles20.

Tension –type headache can cause tenderness of the facial muscles and scalp, the percussion of the forehead may elicit pain ,causing the physician to suspect erroneously frontal sinusitis21.because of the location of the pain in the forehead, patients come to the nasal-sinus physician frequently believing that they have a sinus headache when in fact they have a tension headache 3.Migraine headache and Tension-Type headache are more common in females during adolescence and adulthood. Most likely due to estrogen hormone fluctuations, rather than whether levels are elevated or low, trigger headaches. some research suggests that fluctuation in estrogen levels may impact levels of serotonin and other pain-modulating substances that affect these headache22.

The patient who had migraine, tension-type headache, temporomandibular joint disorders, and others headache, prescribe by himself or by the physicians non-steroidal anti inflammatory drug as analgesia, and anti-histamine which have sedative effect and improve nasal symptoms of migraine, may relieve the headache and made him believes wrongly the sinus causes of his headache.

Cluster headache in international headache society diagnosis for patients with self-diagnosed sinus headache was 1%13.The cluster headache is common in male ,there is sever unilateral orbital, supraorbital, temporal or any combination of these sites, lasting 15-180 minutes if untreated, occurring from once every other day to 8 times a day22.Attacks are usually

nocturnal ,awakening the patients 2-4 hours after sleep onset. Autonomic features ipsilateral to the headache, such as miosis, ptosis, conjuctival injection,lacrimation, nasal congestion, or rhinorrhea 23.Which may be wrongly described as sinusitis.

Dental and Temporomandibular joint disorders causing headache found in 8 patients (1.6%) of our patients, as in temporomandibular joint disorders, pain can occur in the ear, cheek, temple, neck, or shoulder. the headache due to muscle contractions, this condition often coexists with chronic tension headache 21. It is caused by clenching the jaws grinding the teeth(usually during sleep). Pulpal infection of a tooth causes pain in the face and skull. The origin of referred pain of the tooth by trigeminal nerve24.

The contact point headache(sluder neuralgia) were found in 3 patients (0.6%). Two cases due to large bulla conchosa, one due to high septal deviation.The patients with a history of chronic headache unresponsive to medical therapy, diagnosed by endoscopy or CT evidence of contact points(septal deviation or concha bullosa(enlarged middle turbinate),and others causing compression of nasal septum and the middle turbinate, causing irritation of anterior ethmoid nerve supply and pain .most of pain is in the medial canthus. it unilateral and intermittent. It is worse when supine and less when upright, most likely because of the increased nasal congestion when supine. Rapid relief of pain(with in 5 minutes) after application of topical anesthesia to the contact points or use (topical decongestant and anesthesia) is diagnostic25.Surgical correction eliminate the pain.

Trigeminal neuralgia was one case (0.2%), the pain in the distribution of maxillary and mandibular divisions of trigeminal nerve, so assumption that a sinus infection was causing the pain26.

CONCLUSION:

Sinusitis is often over diagnosed. The presence of pain at site of paranasal sinuses, with nasal or ocular symptoms often considered to be a feature of sinusitis, this should not immediately diagnosed as sinusitis. The physician should be carefully evaluate the patients presented with headache described to be of sinus origin by detailed history, proper examinations, and radiological study to diagnose sinusitis, and to exclude migraine, or other causes of headache. The purulent nasal discharge, and positive radiological findings are important for diagnosis of sinusitis.

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Table 1: The International Headache Society(IHS) Diagnostic Criteria for "Headache Attributed to Rhino sinusitis"7.

Category	Criterion
A	**Frontal headache accompanied by pain in 1 or more region of face, ear, or teeth and fulfilling criteria C and D.**
B	**Clinical*,Nasal endoscope, Sinus x-ray, CT, MRI, and/or laboratory evidence of acute or acute-on- chronic rhinosinusitis.**
C	**Headache and facial pain develop simultaneously with onset of acute exacerbation of rhinosinusitis.**
D	**Headache and /or facial pain resolves within 7 days after remission or successful treatment of acute-on-chronic rhinosinusitis.**

***Clinical evidence may include purulent in the nasal cavity, nasal obstruction, hyposmia, anosmia, and/or fever.**

Table 2: Distribution of patients according to the causes of headache, and the sex.

Pathology / Sex	Sinusitis	Migraine	Tension-type headache	Cluster headache	Other Secondary	Total
Male	14(47%)	155(41%)	30(43%)	4(100%)	7(44%)	210(42%)
Female	16(53%)	225(59%)	40(57%)	0	9(56%)	290(58%)
Total	30(6%)	380(76%)	70(14%)	4(0.8%)	16(3.2%)	500 (100%)

Table 3: Distribution of patients according to Causes of headache and age group.

Age/Years	sinusitis	Migraine	Tension-type headache	Cluster headache	Other	Total
≤ 10	0	8(2%)	0	0	0	8 (1.6%)
11-20	7(23%)	68(18%)	5(7%)	0	1(7%)	81(16%)
21-30	11(37%)	195(51%)	16(23%)	3(75%)	5(31%)	230 (46%)
31-40	9(30%)	75(20%)	23(33%)	1(25%)	4(25%)	112 (22.4%)
41-50	3(10%)	28(7%)	20(29%)	0	2(12.5%)	53(11%
≥51	0	6(2%)	6(8%)	0	4(25%)	16(3%)
Total	30(6%)	380(76%)	70(16%)	4(0.8%)	16(3.2%)	500(100%

(Table 4) IHS Criteria for migraine and tension -type headache8.

Migraine

≥5 attacks lasting 4-72 h
Two of the four:
- **Unilateral**
- **Pulsating**
- **Moderate to sever intensity**
- **Aggravation by routine physical activity**

One of the following:
- **Nausea and/or vomiting**
- **Photophobia and phonophobia**

No evidence on history or examination of disease that might cause headaches.

Tension-type headache

10 attacks lasting 30 min- 7 days
Two of the following four:
- **Bilateral**
- **Not pulsating**
- **Mild or moderate intensity**
- **No aggravation by routine physical activity**

One of the following:
- **No nausea/vomiting**
- **Either photophobia or phonphobia or either**

No evidence on history or examination of disease that might cause headaches.

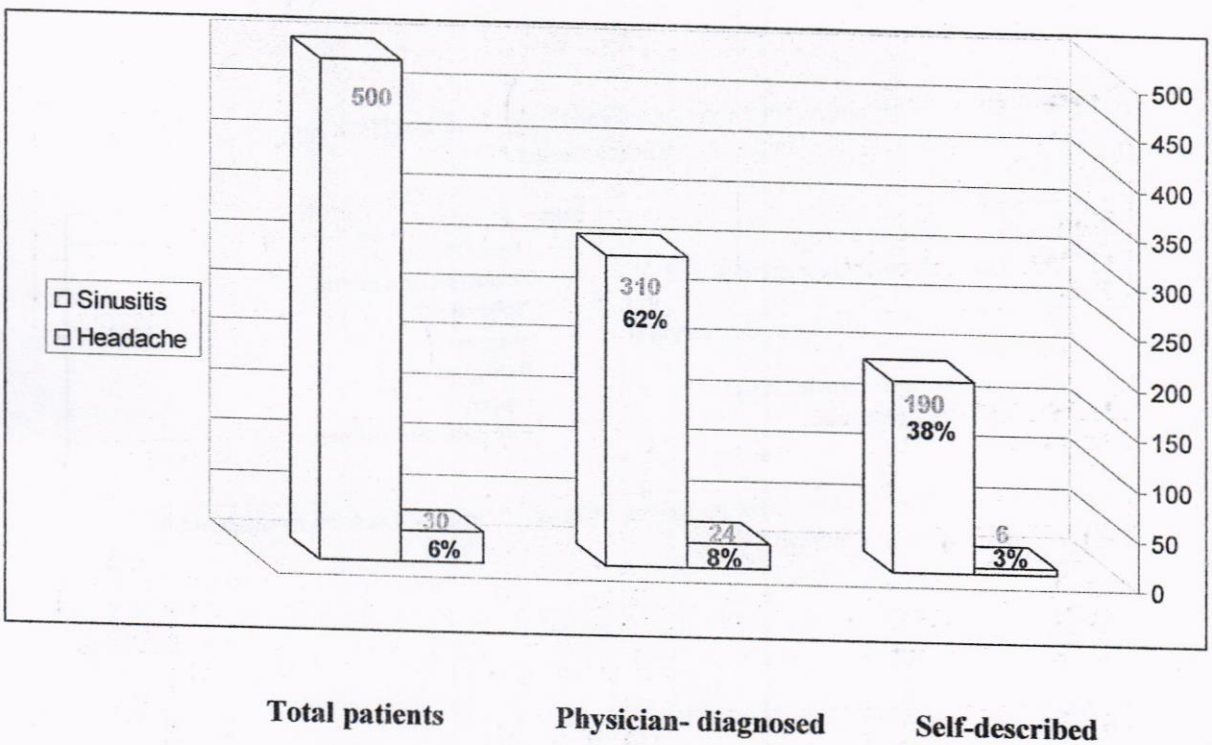

Figure 1:Sinusitis in a self-described and physician diagnosed sinus headache.

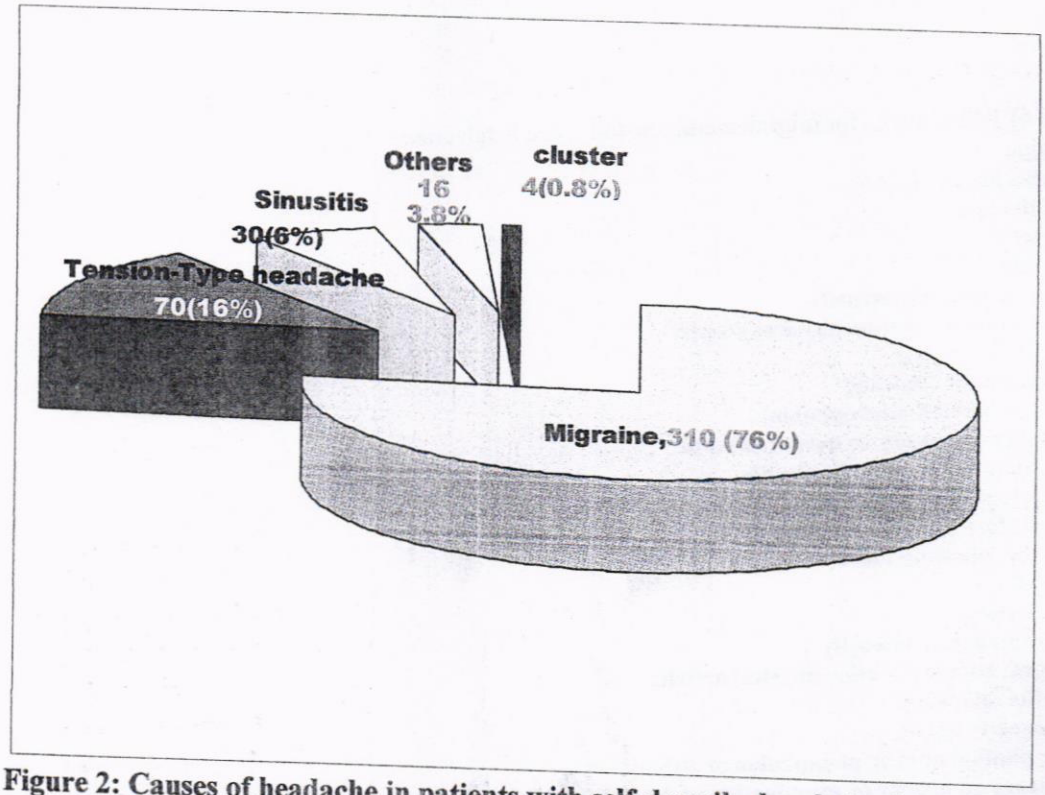

Figure 2: Causes of headache in patients with self-described and physician diagnosed as sinus headache.

Table 5 : The American Academy of Otolaryngology-Head and Neck Surgery Criteria. Factors associated with the diagnosis of Rhinosinusitis 9.

Major factors	Minor factors
• Purulence in nasal cavity. • Facial pain, pressure, congestion, and fullness; • Nasal obstruction, blockage, discharge, and purulence. • Fever (acute rhinosiunsitis only) • Hyposmia and anosmia.	• Headache • Fever (all non acute) • Halitosis • Fatigue • Dental pain • Cough • Ear pain and fullness

***A diagnosis of rhinosinusitis requires at least 2 major factors or at least 1 major and 2 minor factors.**