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Diagnosis & Management of Migraine & Sinus Headaches in Primary Care Settings

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Abstract:

Migraine and Sinus headaches have similar symptoms, often posing a challenge of diagnosis and management at Primary health care level. Migraine headaches are a part of Primary headaches and episodes are outcomes of stress, lack of sleep, smell, or hormonal disruption as part of premenstrual syndrome or during menstruation or any other pathological conditions. On the other hand, Sinus headaches are secondary headaches due to disorders of nose or paranasal sinuses, which usually follow acute infections of sinuses or recurrent nasal congestion due to seasonal allergies, Deviated Nasal Septum or Hay Fever.

Many patients recognize themselves by sheer previous experiences and individual specific triggers, do self-medication but approach a primary care Physician only when pain is not relieved by over-the-counter drugs or they cannot tolerate such medicines, despite controlling the triggers, and if symptoms continue to be persistent or very severe.

This article tries to empower primary care physicians to differentiate between Migraine and Sinus headaches, based on 4 different case reports in recent months.

Key Mehtods & Materials: The author uses one each of Migraine and acute Sinusitis and two challenging cases of chronic sinus headaches and managed in the last 3 months. Literature search adds guidelines for diagnosis and treatment options at primary health care settings.

Key Words & Abbreviations: headaches; migraine; tension headache' sinus headache

Introduction:

A headache is a pain in our head or face that feels like pressure throbbing in nature, or constant, sharp, or dull ache, based on the type, severity, location, and frequency of the pain. Headaches are so common that if someone asks hundreds, thousands or even millions of people if they ever suffer headache, he may not encounter more than 5% who have not experienced it multiple times or at least few times during their lives. They are the most usual form of pain and are a major reason cited for days missed at work or school, as well as visits to healthcare providers. While most headaches are not dangerous, certain types can be a sign of a more serious condition. Migraine, Tension headaches and Sinus headaches are common types of headaches across the world [1].

Migraine and Sinus headaches have similar symptoms, often posing a challenge to diagnosis and management at Primary health care level. Migraine episodes are triggered by stress, lack of sleep, smell, or hormonal changes during menstruation or any other conditions, are known as Primary Headaches. Sinus headaches are due to disorders of nose or paranasal sinuses, therefore, known as secondary headaches as they usually follow acute infections of sinuses or recurrent nasal congestion due to seasonal allergies, Deviated Nasal Septum or Hay Fever. Many patients recognize themselves by sheer previous experiences and individual specific triggers, do self-

medication but approach a primary care Physician only when pain is not relieved by over-the-counter drugs or they cannot tolerate such medicines, they may address moving away from the triggers, and if symptoms continue to be persistent or very sever.

The burden of migraine in India is substantial, as the estimated prevalence is around 16-20% of the population. It is more prevalent in women and rural areas. Each episode lasts for 1-3 days causing significant disability, loss productivity. Headache disorders, including migraine, are often underdiagnosed and undertreated, particularly in low- and middle-income countries, especially in remote rural areas. Migraine is often associated with psychiatric or menstrual disorders and work or social pressures.

This article tries to differentiate Migraine and Sinus headaches, based on 4 different cases, one each of Migraine and acute Sinusitis and two challenging cases of chronic sinus headaches the author came across and managed in the last 3 months. Literature search adds guidelines for diagnosis and treatment options at primary health care settings.

Case Reports:

1. **Ashish's Chronic Frontal Left-sided Sinus headache**:

   Ashis 38-year-old male gold smith by profession, approached in early April 2025, with complaints of light heaviness on the left side of the forehead, cheek and face since a week. A detailed history revealed, common cold and running nose for about 10 days preceding current episode, nasal congestion and thick discharge, loss of smelling sense. On examination temperature =100^0F, pulse= 92/minute were a bit elevated, A pressure applied using thumb elicited tenderness on the frontal and maxillary sinuses and it increased the pain. He reported having such episodes once a year or two, as he was allergic to a few fumes/dusts in goldsmith work. Suspecting Chronic sinusitis, we put him on Hostacyline (Tetracycline Hydrochloride) 500mg twice a day for 5 days, by which he had great relief (75%), but not complete, therefore, the antibiotic continued for another 3 days. For the last 4 weeks he has been fine and advised on long-acting penicillin injection once a quarter.

2. **Veena Left Maxillary Sinusitis**: Veena, 65 years elderly lady, referred by a general practitioner to an ENT specialist with complaints of cold, nasal congestion constant headache worse in the forenoon for over fortnight after trying decongestants and antibiotics. A serial coronal section of paranasal sinuses was studied. It revealed Maxillary sinus normal on the right side but on the left side Mucosal thickening noted. Bony nasal septum deviated towards left. Frontal, Ethmoidal and Sphenoid sinuses and all turbinates were normal. Total CBC showed lymphocytosis reflecting chronic infection A diagnosis of Deviated Nasal Septum towards left and Left Maxillary Sinusitis made and treated with "Cedrick 200 MG" twice a day along with MONTOVENT AL TABLET (combination Levocetirizine and Montelukast- antiallergic medicine) for 2 weeks and slowly tapered. She has been fine for a week now.
3. **Bhargavi's Migraine**: 3 May 2025 Bhargavi aged 30 years called from Hospete, Karnataka, complaining of feeling uneasy, loss of appetite and indigestion and hazy vision. She is a known patient of Migraine since menarche suffering 2-3 time a year usually triggered by premenstrual syndrome, domestic quarrel, or stress of inability to conceive the second baby despite all efforts in last 3 years. This time it was a domestic quarrel with

mother-in-law. The routine treatment with Tablet paracetamol or Migrest {a combination of Domperidone (10mg) + Flunarizine (5mg) + Paracetamol (500mg) did not help this time. After counselling on domestic disturbance and secondary Fertility a advised her to take Tab Combiflam 400m twice a day and Chlorpromazine 25 mg in the night**.** After about 36 hrs. she was relieved of the Migraine.

4. **Acute Sinusitis Case:** A 14-year-old female presented with severe headache, to an ENT OPD of a medical college Hospital in November 2024. She had a history of upper respiratory tract infection two weeks earlier. On physical examination the girl was conscious, depressed, swelling of the forehead, soft to touch, fluctuating sensation. Following a thorough clinical examination, Frontal sinusitis was suspected and treated with maxillary and frontal sinus window drainage & combined antibiotic therapy. The patient was cured in a week's time. A follow-up period of three months showed no recurrence, indicating a favorable outcome.

Discussions:

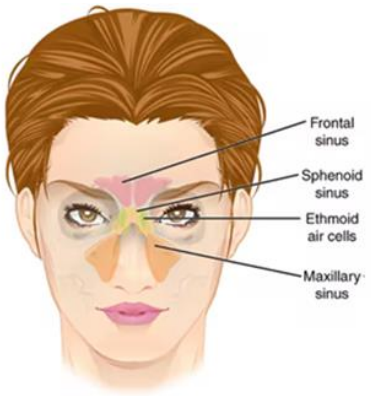
The primary headache disorders, particularly migraine and tension-type headaches, and secondary headaches of Sinus headaches pose a significant public health burden due to their high prevalence, disability, and economic costs. Along with cluster headaches, they are the common causes of pain, disability, lose productivity, and are the reasons for absenteeism in schools, colleges and worksites and impact quality of life [1]. About 96% of people experience a headache at least once in their life & about 10% of them have migraine headaches. Globally, an estimated 40% of the population, or 3.1 billion people, experience headache every year, with females more affected than males. Each day, 15.8% of the world's population has headaches [2].

A meta-analysis of 357 publications, the vast majority from high-income countries, the estimated global prevalence of active headache disorder was 52.0% of migraine = 14.0% of TTH = 26.0% and of H15+ = 4.6%. These estimates were comparable with those of migraine and TTH in GBD 2019, the most recent iteration, but higher for headache overall [2]

A study interviewed 2066 participants from 3,040 eligible households, with 98.3% from rural areas but 52.9% in urban Delhi, in the validation subsample of 291 participants (149 rural, 142 urban), 61 did not report any headache. In the remaining 230 participants who reported headaches in the preceding year, sensitivity, specificity and kappa with (95% CI) were 0.73, 0.80 and 0.43 for migraine; 0.71, 0.80 & 0.43 for tension-type headache and 0.75, 0.93 & 0.46 for headache on ≥ 15 days/month respectively [3].

Sinus Headaches:

Sinus headaches are headaches caused by a disorder of the nose or sinuses, often due to sinus infections (sinusitis). They are characterized by pain, pressure, and fullness in the face, especially around the eyes, cheeks, forehead, and bridge of the nose. The pain may worsen with sudden head movements or when bending over. They are also known as secondary headaches as they usually follow acute infections of sinuses or recurrent nasal congestion due to seasonal allergies, Deviated Nasal Septum or Hay Fever. Sinus infection, often caused by a cold, flu, or allergies, is the most common cause. Allergies can cause sinus inflammation and congestion and Anatomical issues like deviated nasal septum in the nose or sinuses can lead to chronic sinus headaches as was in our first 2 cases [5].



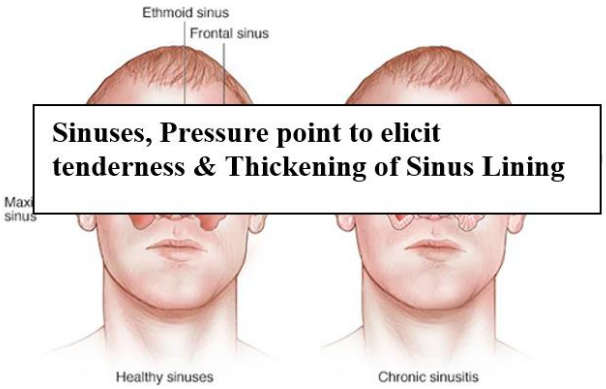
Common but subtle differences in Symptoms: i) **Neck pain** is common in Migraine but rear in Sinus headaches ii) **Nasal discharge:** Sinus headaches symptomatically cause nasal discharge /congestion, which is thicker, yellowish or greenish purulent. In Migraine sometimes discharge may be there, but it is clear, and watery iii) **Mood changes:** Migraine headache is associated with mood changes like nausea, vomiting and numbness and they are throbbing in nature. Sinus headaches do not have mood changes, and they increase as the day progresses until afternoon and reduce by evening [7]

Migraine: The chronic Migraine is defined as episodes of 15 or more days of headache per month for 3 or more months or at least 8 or more headache days in each month. Migraine may be with or without Aura. Migraine headache with aura (MHAWoA) exhibit a) recurrent episodes last for 4-72 hrs., b) unilateral pain iii) Throbbing or Pulsating quality iv) Moderate to Sever intensity pain, aggravated by physical activity v) associated with Nausea, Phonophobia and Photophobia [4,7].

Sinus Headaches: On the other hand, Sinusitis headaches are i) Correlated with Rhinosinusitis, ii) the pain is felt in face, forehead, cheeks and bridge of the nose iii) Pain is accompanied by fullness or a feeling of pressure iv) Purulent nasal discharge or congestion, hyposmia or Anosmia is common v) A pressure applied on the sinuses enhances the pain as shown in the figure [5,6].

Sinusitis is classified as Acute and Chronic with similar symptoms based on the duration. Acute sinusitis is a short-lived infection of the sinuses often linked to a cold. The symptoms of chronic sinusitis last at least 12 weeks and are caused by allergies, structural problems, or infections. There might be many bouts of acute sinusitis before it becomes chronic sinusitis.

In clinical practice 50% of migraines are misdiagnosed, especially if preceded by common cold and forceful sneezing in the recent past. Similarly, up to 90% of cases of sinus headaches, going to general practitioners, are diagnosed as migraine. People with migraine may also develop symptoms like sinusitis, like a runny nose or congestion. Migraine headaches also cause pain along the trigeminal nerve, which interacts with the sinus passages leading to confusion of it to be related to the sinuses [4].



Diagnosis: Both conditions are diagnosed clinically most often. Imaging is done for the diagnosis in both cases, mostly to rule out Meningitis, encephalitis, brain tumors or Abscess. Paranasal imaging is done to rule out deviated nasal septum (DND) or severe or persistent infections as was done in Veena's case. Cervical spine imaging is done to rule out degenerative osteoarthritis, Cervical spondylollsthesis, herniated disc or abscess.

Treatment:

Inflammation of the frontal sinus is a relatively common clinical condition occasionally progressing to frontal sinus abscess. Treatment of Sinus headache often involves i) viral infections subside naturally with antihistamines & decongestants to address allergy symptoms like nasal congestion & anti-inflammatory drugs & analgesics to relieve pain ii) for bacterial infections antibiotics are added in addition to antihistamines and analgesics. For acute sinusitis ENT specialists give Saline nasal sprays and humidifiers, Corticosteroid nasal sprays or pills for inflammation. In rare cases, Primary care physicians may have to referrer for surgical interventions like maxillary & frontal sinus window drainage or Septoplasty for Deviated Nasal septal correction [6].

Migraine treatment focuses on relieving symptoms during an attack and preventing future attacks. Symptomatic treatment includes Analgesics and anti-inflammatory drugs like ibuprofen and acetaminophen, as well as prescription medications like triptans. Preventive advice includes lifestyle changes, supplements, & prescription of beta-blockers or antidepressants [3,4].

Prognosis: Viruses cause most sinus infections, which clear up in 5-10 days, and the sinus headache goes away. Sinus issues that don't go away in 8-10 days indicate a bacterial or fungal infection as was in case of Ashis and Veena that require antibiotic or antifungal treatment.

Prevention: Taking precautions towards seasonal allergies that make spring a season of nasal congestion which may turn into a viral sinus infection. An allergies test can identify the item/s one is allergic to, and they must avoid the same. As common colds may lead to viral sinus infections, one can prevent colds by washing our hands or using hand sanitizers & staying away from people who have colds. Treatments for Nasal polyps which block our sinuses and cause sinus headaches include steroid sprays and pills, stents and surgery to remove polyps. A deviated septum can be corrected with Septoplasty.

Conclusion:

Migraine and Sinus headaches have similar symptoms, often posing a challenge of diagnosis and management at Primary health care level.

Three groups of symptoms /Signs namely i) Neck pain is common in Migraine but rear in Sinus headaches ii) Nasal discharge: Sinus headaches symptomatically cause nasal discharge /congestion, which is thicker, yellowish or greenish purulent. In Migraine sometimes discharge may be there, but it is clear, and watery iii) Mood changes like nausea, vomiting & numbness and throbbing pain are typical of Migraine.

Migraine treatment focuses on relieving symptoms during an attack and preventing future attacks. Sinus headaches treatment focusses on nasal congestion & anti-inflammatory drugs & analgesics to relieve pain and antibiotics if bacterial infections is suspected.

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