

REVIEW ARTICLE

Headache: A Review

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Abstract

Headache is the pain of any kind or discomfort in the head excluding the lower part of the face and including the upper part of the neck. Of all the painful states that afflict humans, headache is undoubtedly the most frequent and the most common reason for medical consultation. Epidemiology of headache in Bangladesh is not exactly known but statistics from several countries may reflect the burden of headache all over the world as well as in our country. About 40 million Americans suffer from severe HA annually. Classification of Headache disorders are Primary Headache Disorders Secondary Headache Disorders. Primary headache disorders includes Migraine, Tension type of headache (TTH), cluster headache and other trigeminal autonomic cephalalgias, and others (hypnic headache, primary thunderclap headache, hemicrania continua, new daily-persistent headache (NDPH)). Tension-type of headache is the most common variety of headache with one year prevalence has been variably reported from 30%-90%. Migraine is a common, frequently incapacitating, headache disorder characterized by episodic attacks of moderate-to-severe headaches, and various combinations of neurological, gastrointestinal and/or autonomic nervous system dysfunction. Cluster headache (CH) is a strictly unilateral headache that occurs in association with cranial autonomic features and, in most patients, has a striking circadian periodicity. Treatment of tension type of headache includes reassurance, symptomatic, prophylactic. Symptomatic treatment comprises analgesics e.g. paracetamol, NSAID, anxiolytic e.g. diazepam, other benzodiazepine (BNZ). 'The patient with a headache often finds himself a medical orphan. He is fortunate indeed if his headache is transient, for other wise he may find himself on an excursion to the ophthalmologist, otolaryngologist, neurologist, dentist, psychiatrist, chiropractor, and the latest health spa.

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Introduction

Headache is the pain of any kind or discomfort in the head excluding the lower part of the face and including the upper part of the neck. Of all the painful states that afflict humans, headache is undoubtedly the most frequent and the most common reason for medical consultation. In fact, there are so many cases of headache that special headache clinics should be established in practically every medical college in our country. Headache has troubled human kind from the dawn of civilization.

Epidemiology of headache in Bangladesh is not exactly known but statistics from several countries may reflect the burden of headache all over the world as well as in our country. About 40 million Americans suffer from severe HA annually. 13000 tons of aspirin are consumed worldwide per year. In Denmark, 99% of women and 93% of men suffer from headache in their lifetime. One in 3 suffer from severe Headache in their life in general population. Worldwide prevalence as such, Tension type Headache: 70 - 80%, Migraine: 20 - 30%, Cluster Headache: < 1%, Organic brain disease: 2%, Head trauma: 3%, Systemic infection: 7%, Disease of eye (Sinuses): < 8%¹. In Bangladesh (Hospital based study) shows tension type of headache 75%, Migraine 18%, Space occupying lesion: <1 %, Head trauma 1%, Others 5%. Tension type of headache is worldwide scores the highest incidence. Brain is pain insensitive. Pain sensitive structures are - Venous sinuses, cortical veins, optic, oculomotor, basal arteries, basal dura, first 3 cervical nerves, scalp, orbital contents, paranasal sinuses, teeth, gum, ear. Posterior fossa innervated by IX, X Cranial nerves and upper cervical nerves, pain referred to suboccipital and upper cervical region. Anterior and middle fossa - innervated by 1st, 2nd division of V Cranial nerve- pain is referred to forehead and temporal region.

Classification of Headache disorders are Primary Headache Disorders Secondary Headache Disorders. Primary headache disorders includes Migraine, Tension type of headache (TTH), cluster headache and other trigeminal autonomic cephalalgias, and others (hypnic headache, primary thunderclap headache, hemicrania continua, new daily-persistent headache (NDPH).

In case of secondary headaches, International headache society adopted the followings, Headache attributed to head and/or neck trauma, cranial or cervical vascular disorders, non-vascular intracranial disorder, a substance or its withdrawal, infection, disorder of homeostasis, Headache or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cranial structures. Headache attributed to psychiatric disorder, Cranial neuralgias and central causes of facial pain, other headache, cranial neuralgia, central or primary facial pain^{2,3}.

Tension-type of headache

Tension-type of headache is the most common variety of headache with one year prevalence has been variably reported from 30%-90%, lifetime prevalence is 78% with 63% males and 86% females, male to female ratio about 1:1.3, prevalence peaks in the fourth decade. Etiology and pathophysiology is multifactorial and poorly understood, can arise from sustained contraction of pericranial muscles (muscle contraction headache), However there is no correlation between muscle contraction, tenderness, and the presence of headache, there may be as much or more muscle contraction in those with migraine as in those with tension-type headache, may be referred from upper cervical structures (joints, ligaments, and muscles), May be due to abnormal neuronal sensitivity and pain facilitation, prolonged pain input from the periphery may cause central sensitization in the trigeminal nucleus caudalis neurons, may be triggered by physical or psychological stress, lack of sleep, anxiety, and depression. Tension-type headache in migraineurs may be different than in non-migraineurs, may respond to triptans in migraineurs, may have typical migraine triggers, light or noise sensitivity more likely to accompany. Clinical features include (according to international headache society criteria) at least ten previous headache episodes fulfilling the criteria. Number of days with the headache less than 180/year or 15/month, headache lasting from 30 minutes to 7 days, At least two of the following pain characteristics, pressing/tightening (non-pulsating quality), mid or moderate severity, bilateral location, aggravation by walking stairs or similar routine physical activity, nausea or vomiting (anorexia may occur), photophobia and phonophobia are absent, one but not the other is present.

Character of pain, variably described as pressure, soreness, tightness, a band or cap on the head, or weight on the head, occasionally pulsating during severe pain episodes and usual location is 90% bilateral. Some patients may have continuous headaches for years⁴.

Migraine

Migraine is a common, frequently incapacitating, headache disorder characterized by episodic attacks of moderate-to-severe headaches, and various combinations of neurological, gastrointestinal and/or autonomic nervous system dysfunction. Exact incidence is not known but the following statistics accepted worldwide migraine affects 13% of the population, and one in every four U.S. households has a migraine sufferer. 70% of all migraine sufferers are women. Migraine sufferers lose more than 157 million work-days each year. More than half (51%) of sufferers report a 50% or more reduction in work and/or school and 66% report a 50% or more reduction in household work productivity. Phases of the migraine attacks are prodrome, aura, headache and postdrome. In migraine premonitory phenomena includes mental state (depressed, hyperactive/ restless, euphoric, talkative, irritable, drowsy), neurologic symptoms consist photophobia, difficulty concentrating, phonophobia, dysphasia, hyperosmia, yawning. General symptoms may have stiff neck, food cravings, cold feeling, anorexia, sluggish, diarrhea or constipation, thirst, urination, fluid retention. Migraine aura is a complex focal neurologic symptoms that initiates or accompanies an attack and it develops over 5 to 20 minutes and usually lasts less than 60 minutes. Visual, sensory, or motor, and may involve language or the brainstem. Visual symptoms are fortification spectra, photopsia, obscurations, distortions and hallucinations. Sensory and motor symptoms may have paresthesias, weakness. Occasionally patient may come with aphasia or dysphasia. Features of migraine headache occur any time of day, 1 to 10 per month (average 1.5), gradual onset, peak, and then subsidence rare crash migraine, duration 4 to 72 hours (adults), 2 to 48 hours (children) and location is usually nilateral 60% (always same side 20%), bilateral 40%. Pain is moderate to severe 50% pulsating, 50% tight, pressure aggravated by movement. After headache (post-headache), this stage lasts from to 48 hours, during this stage patient

may feel confused, tired, mildly angry, have a hang-over. Major forms of migraine are migraine without aura (common) 70%, migraine with aura (classical) 25%. The aura develops during a period of 5 to 20 minutes, usually lasts less than an hour. Chronic migraine sufferers are 5% . Diagnostic criteria of migraine without aura: (By the International HA Society).a. At least 5 attacks, b. Headache attacks lasting 4-72 hours, c. Patients must fulfill two criterias from group a and one accompaniment from group. Migraine with aura: diagnostic criteria as follows: one or more transient focal neurological aura symptoms, gradual development of aura symptoms over 4 min. or several symptoms in succession, aura symptoms last 4-60 min, headache follows or accompanies aura within 60 min. Pathophysiology of migraine is ill under stood. It is primarily a neurovascular disorder that cause central nervous system dysfunction and vascular consequences ultimately caused headache⁵.

Group a

- Unilateral pain
- Pulsatile or throbbing pain
- Moderate to severe pain that I may inhibit or restrict ability to function
- Pain aggravated by routine physical activity (eg. Bending over, || climbing stairs)

Group b

Presence of:

- Nausea and/or vomiting
- Photophobia
- phonophobia

Cluster headache

Cluster headache (CH) is a strictly unilateral headache that occurs in association with cranial autonomic features and, in most patients, has a striking circadian periodicity. It is an excruciating syndrome and is probably one of the most painful conditions known to humans. Female patients describe each attack as being worse than child birth. Prevalence of approximately 69 cases per 100,000 people, the male & female ratio is 3.5-7 : 1.56. It can begin at any age though the most common, age of onset is the third or fourth decade of life. Etiology and pathophysiology is incompletely understood, genetic factors in some cases, positive family history in 7%, first degree relatives have a 14-fold increased risk of cluster headache, activation of the trigeminovascular system as in

migraine may explain the pain, autonomic features due to activation of the cranial parasympathetic fibers. A postganglionic horner's syndrome during attacks is indicative of involvement of the carotid sympathetic plexus, the cavernous carotid artery, where the parasympathetic, sympathetic, and trigeminal fibers converge, is a likely location. Clinical features consists periodicity, individual cluster attacks occur during attack phases or cluster periods. Most patients have one to two annual cluster periods with each lasting between one and three months. Some patients have a seasonal propensity. Remission usually last between 6 months to 2 years. Usually one to two attacks per day although some patients will have up to eight attacks per day, in individuals, the attacks usually occurs at the same time each day. Small quantities of alcohol can trigger attacks during cluster periods but not during remission, nitroglycerin and histamine can trigger attacks during cluster periods.

Secondary headaches are due to raised intra cranial pressure. The causes of ICP are intra cranial space occupying lesion (IC SOL) e.g. tuberculoma, abscess, hydrocephalus i.e. obstructive and communicating, diffuse brain swelling e.g. meningo-encephalitis, metabolic encephalopathies, subarachnoid haemorrhage, venous sinus thromboses, IIH (Idiopathic intracranial hypertension), pseudo-tumour cerebrii. Referred headache comprises headache from eyes e.g. refractory error, glaucoma, ears e.g. ASOM, teeth/gum e.g. abscess, PNS e.g. inflammation, C. spine e.g. spondylosis. Characteristic features of headache with raised ICP includes persistent headache, diffuse, severe, worse in the early morning, worse with bending, sneezing, coughing, associated with vomiting, double vision, visual obscuration and physical examination reveals papilloedema, 6th CN palsy and those of underlying cause⁶.

Drug-induced headache

Many drugs can cause including nitroglycerin, nti hypertensives (betablockers, calcium channel blockers, angiotensin converting enzyme inhibitors, and methyl dopa), dipyridamole, hydralazine, sildenafil, histamine receptor antagonists such as cimetidine and ranitidine), NSAIDs especially indomethacin, cyclosporine, amphotericin, griseofulvin, tetracycline, and sulfonamides. Drug-induced aseptic meningitis has numerous causes: NSAIDs, antibiotics (trimetho-

prim/sulfamethoxazole, sulfasalazine, cephalosporins, ciprofloxacin, isoniazide, and penicillin), intrathecal drugs and diagnostics (antineoplastics such as methotrexate and cytarabine; gentamicin; corticosteroids; spinal anesthesia; baclofen; repeated iophendylate for myelography; and radiolabelled albumin), intraventricular chemotherapy, intravenous immunoglobulin, vaccines (polio, measles, mumps, and rubella; and hepatitis B), other drugs such as carbamazepine, muromonab CD-3, and ranitidine.

Headache diagnosis is not difficult if proper history is taken from the patient. Unnecessary investigation should be avoided but some times special investigation such as CT scan, MRI brain may be needed when secondary cause is suspected.

Headache Treatment⁷⁻¹²

Treatment of tension type of headache includes reassurance, symptomatic, prophylactic. Symptomatic treatment comprises analgesics e.g. paracetamol, NSAID, anxiolytic e.g. diazepam, other benzodiazepine (BNZ). Prophylactic treatment consists amitriptyline, other TCAs e.g. nortriptyline, imipramine, may be combined with beta-blocker for anxiety neurosis. After careful titration the drug that gives best benefit without much side effects should be continued for 4-6 months and then gradually tapered off, if symptoms recur another drug combination needs to be restarted to avoid longterm complication of adrug. Prognosis of tension type of headache is quite unsatisfactory because after a considerable time there is high rate of recurrence due to persistent psychosocial stress factors.

Acute migraine treatment consists, non-prescription medications - use with care, NSAIDs (eg, ibuprofen, naproxen), aspirin, acetaminophen, caffeine combination. Prescription medications e.g. triptans, dihydroergotamine (DHE). triptans available for migraine are Rizatriptan, Almotriptan, Naratriptan, Eletriptan, Sumatriptan, Zolmitriptan, Frovatriptan. Ergots available for Migraine, ergotamine tartrate, combinations (e.g., Cafegot, Ercaf, Wigrine), dihydroergotamine (D.H.E.45). Triptan contraindications includes history, symptoms, or signs of ischemic cardiac, cerebrovascular, or peripheral vascular syndromes, uncontrolled hypertension, concurrent administration or use within 2 weeks of discontinuation of MAO-A inhibi-

tors, hemiplegic or basilar migraine, use within 24 hours of treatment with an ergotamine-containing or ergot-type medication or another 5-HT₁ agonist, hypersensitivity to sumatriptan or any of the ingredients. Triptans in children and adolescents are under study in the pediatric population but the triptans like sumatriptan nasal spray, 5 to 20 mg; tablets, 25 to 100 mg, rizatriptan tablets, 5 mg, zolmitriptan tablets, 2.5 to 5 mg may be safely used. Efficacy for pain relief is similar to adults, but higher placebo rates; triptans were well tolerated in the adolescent population. Principles of successful migraine prevention follows "Start low, go slow", may control headaches at lower dose than other indications for given preventative, migraineurs can be particularly sensitive to drug side effects, do not go so slow that no response is seen and patient gets discouraged, use lowest effective dose, allow adequate time to evaluate efficacy - may not see response for 8 to 12 weeks, consider comorbid issues-affective disorders, anxiety, epilepsy, ischemic cerebral, and other vascular diseases, ensure no contraindication to migraine treatment secondary to comorbidity, aim for monotherapy, limit frequent analgesic use, which can interfere with prophylaxis, provide appropriate acute medications for migraines, set appropriate patient expectations. Various drugs are used for migraine prevention but the most useful drugs are anticonvulsants (divalproex sodium), beta blockers propranolol (Inderal), propranolol (long acting) (Inderal LA), nadolol (Corgard), timolol maleate (Blocadren), metoprolol (Lopressor, Toprol XL), atenolol (Tenormin). Tricyclic antidepressants such as nortriptyline HCl, amitriptyline HCl. SSRIs e.g. Fluoxetine HCl (Prozac), sertraline HCl (Zoloft), paroxetine HCl (Paxil). Calcium channel blockers: verapamil HCl (Calan, Isoptin), nimodipine (Nimotop). NSAIDs comprises naproxen sodium, ketoprofen (Actron, Orudis), indomethacin. Serotonin antagonists includes methysergide maleate, cyproheptadine HCl.

Management of pediatric migraine is limited. No satisfactory studies performed in this regard. Adult preventive medications are used with age adjusted dosages. Propranolol 1 mg/kg up to 10 mg bid, Amitriptyline, nortriptyline 0.25 to 0.5 mg/kg up to 10 mg hs, Cyproheptadine 2 mg bid or 4 mg hs may be used. Future preventive migraine therapy which includes the agents that inhibit excessive excitatory agents like

N-methyl-D-aspartate (NMDA), glutamate receptors, 5HT₂ receptors, neurokinin₁ receptors. Enhance depressed inhibitory agents e.g. GABA. Agents modifying neuronal activity consists calcium/sodium ion channels, ACE Inhibitors, lisinopril. If prevention fails consider the following, overuse of rebound-inducing acute agents, inadequate dosages, misdiagnosis, unrecognized comorbidity, tachyphylaxis.

Therapy for cluster headache includes abortive and preventive. Abortive treatment consists. Ergotamine tartrate, combinations (eg, Cafergot, Ercaf, Wigraine), dihydroergotamine mesylate (D.H.E. 45), inhaled oxygen, sumatriptan succinate (Imitrex), lidocaine HCl (Xylocaine), corticosteroid (prednisone) and preventive treatment are lithium carbonate, methysergide maleate, verapamil HCl, indomethacin etc. There are several methods to relieve pain for headache patient. Although these are not widely acceptable but occasionally patient may be benefited from this practices, a. Sit comfortably in a chair, breathing freely, b. Cradle the back of your neck with your hand and squeeze gently, while slowly rolling your head in a circle, c. Release for a few moments, d. Squeeze your neck again, this time slightly increasing the pressure, e. Repeat squeezing and releasing 20 times, f. Next, using your fingertips, press into any areas in your neck and shoulders that are sore or tender, moving your arms and shoulders in a gentle, rhythmic motion, g. Continue Step for several minutes, until your headache fades.

Do's & don'ts for headache:

Do:

- > Take ginger at the first sign of a headache. According to the National Headache Foundation, ginger has a small amount of antihistamine and is an anti-inflammatory
- > Get plenty of sleep.
- > Take a multivitamin supplement that includes the B vitamins and antioxidants. Deficiencies of these vitamins are a possible cause of migraine
- > Avoid trigger foods.
- > Avoid stress, which is considered a key headache trigger
- > Recent studies show that omega-three fatty acids, the kind found in fish oil, may help prevent migraines. This diet includes plenty of fish options that may reduce the frequency of your headaches

Don'ts:

- > Go long periods without eating or forget to drink enough fluids. Low blood sugar or dehydration may be other dietary causes of headaches
- > Consume artificial flavorings and preservatives, especially MSG, sulfites and nitrites. Most wines, many dried fruits and preserved fruits, canned foods, Chinese foods.
- > Eat foods containing artificial sweeteners, especially Aspartame, beverages, candy, gum.
- > Consume hot, fresh, yeast-containing breads, including coffee cakes or doughnuts (okay if allowed to cool and okay toasted)
- > Eat particular fruits-papayas, passion fruit, figs, dates, raisins, citrus fruits. Limit bananas to one a day. Limit tomatoes to 1/2 cup per day
- > Use vinegars, also avoid most mustard, mayonnaises and ketchups. Eat food containing large amounts of onion, chocolate and alcohol or red wine.

Packard's Warning:

"The patient with a headache often finds himself a medical orphan. He is fortunate indeed if his headache is transient, for otherwise he may find himself on an excursion to the ophthalmologist, otolaryngologist, neurologist, dentist, psychiatrist, chiropractor, and the latest health spa. He is x-rayed, scanned, fitted with glasses, analysed, massaged, relieved of his turbinates and teeth and too often emerges with his headache intact."

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