HEADACHE IN CHILDREN

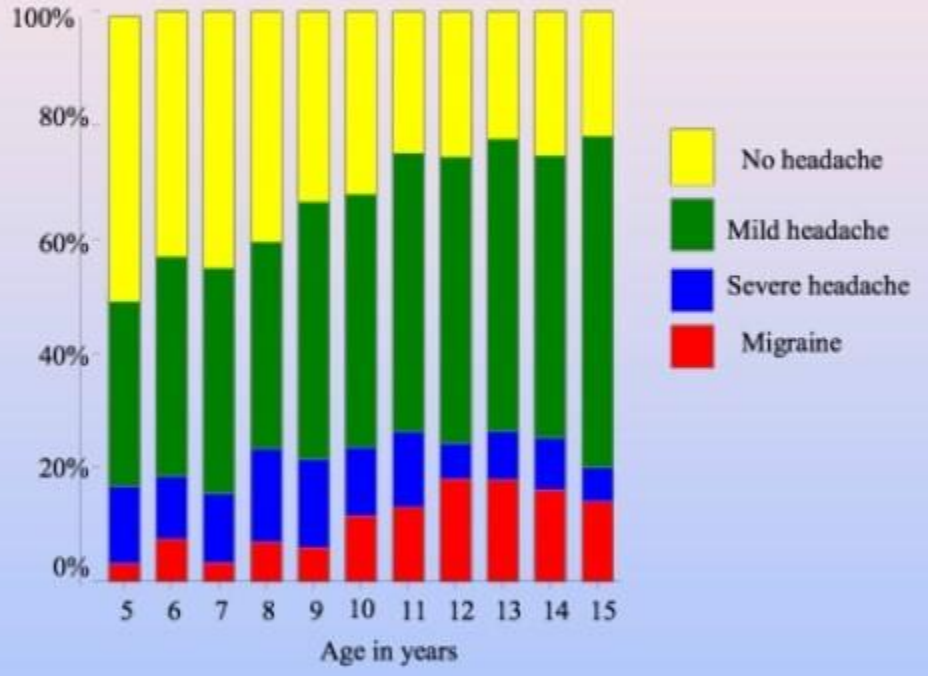
ALI FARZAN MOGHADAM M.D.

NEUROLOGIST

Prevalence of headache in schoolchildren

≥ 1 headache over 1 year	50-70%
Migraine	10.6%
Chronic TTH	0.9%
Episodic TTH	18-25%

From several studies



Aberdeen schoolchildren
(Abu-Arafeh and Russell, BMJ, 1994)

Headache in Children

Challenging diagnosis in young children.

- Limited verbal, language abilities.
- Poor localization, quality.
- Non-specific complaint.
- Associated with other illnesses

- The children with headaches are adversely affected in all areas of functioning including school performance, emotional development and physical health.

CHILDHOOD HEADACHES & FUTURE HEALTH PROBLEMS

- Children who experience frequent headaches are more likely to develop health problems in adulthood, including psychiatric disorders.
- Children with frequent headaches are more likely to experience psychosocial problems and to grow up with an excess of both headache and other physical and psychiatric symptoms.

International Classification of Headache Disorders (ICHD-II).

Primary Headaches

- Migraine
- Tension-type headaches (TTHs)
- Cluster headaches

Secondary Headaches

- **Infectious**
  (***sinusitis, pharyngitis , ear infections*** **)**
- Vascular
- Traumatic
- Toxic
- Mass lesion

Common Clinical Headache Patterns

a)***Acute Recurrent: migraines***

b)***Acute Generalized: systemic illnesses***

c)***Acute Localized: OM, sinusitis, trauma***

d)***Chronic Progressive: masses, haemorrhage***

e)***Chronic Non-progressive: depression,*** **anxiety**

Causes of headaches

- Brain tumours
- CNS infection(TB, chronic meningitis, abscess)
- Arterial hypertension and vascular malformation
- Benign increase intracranial pressure
- Hydrocephalus and congenital malformation
- Para nasal sinusitis
- Endocrine and metabolic causes (hypoglycaemia)

Acute Headache

- It could be migraine
- Cerebrovascular bleed(CT or MRI with contrast)
- Trauma (CT)
- Meningitis (LP)
- URTI- Viral
- Encephalitis (EEG and CT or MRI)
- Drugs (urine toxicology)

- Ventricular shunt malfunction

Prevalence of migraine and other headaches in schoolchildren

- Prevalence of migraine = 10.6%
  - M+A = 2.8%
  - M-A = 7.8%
- TTH = 0.9%
- Non-specific recurrent headaches = 1.3%
- Prevalence increased with age
  - Male preponderance <12 y
  - Female preponderance ≥12 y

(Abu-Arefeh I, Russell G. BMJ 1994;309:765-9)

Migraine attacks - clinical features

- Prodrome (Change in mode or activity level)

- Aura (Occur in 10-50% of paediatric patients with migraine)- Phtopsia, Scatoma, Numbness, tingling, ataxia, dizziness , and Vertigo

Migraine- clinical features-2

- Headache(Barlow et al, 300 pts with juvenile migraine, only 9% of attacks were children awakened from sleep by the onset of a migraine and only 4% of attacks did they begin on awakening)

- Resolution(headache may last 1-4hrs, sleep and analgesic)

- Postdrome(Lethargy, anorexia and mood disturbances)

Abdominal migraine

Affects 1% to 4% of children

Onset is between the ages of 7 to 12 years, F>M

Acute incapacitating non-colicky periumbilical abdominal pain that lasts for 1 or more hours

Associated with Pallor, anorexia, nausea, vomiting, photophobia, or headache

Positive family history of migraine

Must exclude or eliminate of other organic causes

Use same approach for treating headache and migraine as well as lifestyle modifications.

Chronic migraine

Defined as Headache on at least 15 days /month of which at least 8 days with typical migraine over at least 3 months

- Aim to revert to episodic migraine
- Explore medication overuse as a contributory factor
- Preventative treatment better than rescue treatment
- Multidisciplinary approach (life style modification)

MIGRAINE IN CHILDREN AND ADOLESCENTS

- Migraine headaches are common in children; ***their frequency increases through adolescence.***

- The mean age of onset is **7.2 years for boys** and **10.9 years for girls**, with prevalence rates reported at:
  - 3% for children age 3-7 years
  - 4-11% for children age 7-11 years
  - 8-23% for children age 11-15 plus years

How childhood migraine may differ from adult migraine

- **DURATION- Attacks last 1-4 hours**
- **LOCATION**- In contrast to adults children often feel pain **on both sides of the head**
- **Aura infrequent**
- **Associated nausea, vomiting and abdominal pain**
- **Prodromes and trigger factors common**
- Children may look **pale** and appear **restless or irritable** before and during an attack
- Other children may become nauseous, lose their appetite, or feel pain elsewhere in the body during the headache

PRECIPITATING FACTORS OF MIGRAINE ATTACKS

- **Anxiety**
- **Emotional problems**
  - Stress from school activities
  - Tension between family members
- Fatigue
- Weather changes
- Irregular eating and sleep
- Dehydration and certain foods and drinks.
- Menses

Its difficult to diagnose the Migraine in children

Clues to identify migraine attacks

- ***Sensitivity to light and noise***: suspected when a child :
  - refuses to watch television or use the computer
  - when the child stops playing and lie down in a dark room.
- Irritable and complain of **abdominal pain** during headache (abdominal migraine)

Childhood periodic syndromes

(precursors of migraine according to revised HIS criteria,2004)

❑Cyclic vomiting syndrome

- Recurrent periods of intense vomiting separated by symptom-free intervals
- Rapid onset at night or in the early morning. Nausea, anorexia, abd pain, pallor, headache, photo/phonophobia.
- Begins when the patient is a toddler
- Often precipitated by travel

❑Abdominal migraine

- Paroxysmal abdominal pain without headache
- Older pre-adolescent children

❑Benign paroxysmal vertigo of childhood

- Loss of balance and inability to walk
- Starts 2-6 y
- accompanied by symptoms common in migraine
  Pallor, nausea, photophobia, phonophobia

Consequences of 'atypical' symptoms

- Symptoms are frequently misunderstood
  - Blamed on stress or malingering
- True cause (migraine) often missed by parents and doctors
- 'Adult' type symptoms develop as the child moves into adolescence

Tension Headache

- Tension-type headaches clearly occur in children but have not been rigorously studied.
- Reported prevalence rates vary widely.

Common causes:

- **Emotional stress** related to family, school, or friends.
- Eyestrain
- neck or back strain due to poor posture.
- **Depression** may also be a reason for headaches.
- **Anxiety**
- Abuse: physical, sexual, verbal

Chronic progressive headache

Brain Tumour- (space occupying lesions)

- Late night, early morning headaches, vomiting, neurological changes include academic performance, weakness, visual, personality, papilloedema, ataxia

- **Benign increased intracranial pressure** *(Pseudo-tumour cerebri)*
  - Benign increased intracranial pressure with papilloedema, sometime associated with VI palsy
  - Typically described in adolescent girls.

Brain Tumour

- Uncommon in school-age children
- Prevalence 3 per 100,000 per annum or any other space occupying lesions
- Additional neurological symptoms and signs on examination

Medication Overuse Headache is a chronic daily headache

- in a patient taking rescue medications on 10-15 days per month
- for at least 3 months
- withdrawal of medication reduces headache frequency by at least 50%

Occurs on the background of an episodic primary headache

Treatment should include stopping all painkillers
Headache will be worse before getting better
May treat with pain modifying agents to reduce suffering

EVALUATION

- The first step in evaluating a child with headache is to rule out secondary causes.

- Detailed history and medical examination necessary to differentiate primary from secondary headache.

- If child's headache become worse or become more frequent despite treatment referral to a specialist is required.

EVALUATION

- After ruling out secondary causes of headache detailed work up should be done regarding nature, pattern, precipitating factors, associated comorbidities.

- Specifically different **anxiety disorders, depression, adjustment problems, somatization** etcs should be ruled out.

Emotional and behavioural problems

- Psychiatric co-morbidity in children with primary headaches aged 6-18 y (migraine and TTH):
  - Depression
  - Anxiety
  - Somatisation

- 33% of children required psychiatric therapy for these conditions

(Just U et al. Cephalalgia 2003;23:206-13)

- Increasing use of computers, laptops, video games and other electronic gadgets are triggering acute headaches among teenagers in India.

- Of this ***tension type*** headache is most prevalent, followed by migraine-generated headache.

Indication for neuroimaging -2

- Low priority
- Chronic non-progressive headache
- Mixed headache
- Classic or common migraine
- meningeal signs
- variation in headache location

Indications for neuroimaging

- **High priority**
  - Chronic progressive headache
  - Papilloedema
  - Neurocutaneous syndromes (NF or TS or others)
  - Younger age < 3 years
  - Positive neurological signs or symptoms
  - Supporting evidences from history
    - Dipolpia
    - Vomiting
    - Headaches that awaken him/her from sleep
  - Sudden sever headache which called thunder headache which may indicate Subarachnoid or intracranial haemorrhage (aneurysm or AVMs)
  - Trauma

Approach to the child with recurrent headache

- History
- Physical examination
- Laboratory or imaging studies

When to perform neuroimaging study ?

- Age < 3 y
- Abnormal neurological exam
- Chronic progressive pattern

Management of migraine

- Pharmacologic therapy for acute attack
- Preventive therapy
- Non-pharmacologic methods (relaxation , exercise)

MANAGEMENT OF TENSION-TYPE HEADACHES

- There have been few controlled treatment trials for tension-type headaches in paediatric patients.
- Low-dose amitriptyline (10 mg per day) may be efficacious.
- Biobehavioural therapies, including relaxation techniques have also demonstrated therapeutic benefits.
- Children with tension-type headaches have increased rates of ***depression*** **(Sadock, Benjamin , Kaplan & Sadock's Comprehensive Textbook of Psychiatry, 9th Edition)**

NON-PHARMACOLOGIC METHODS

Non-pharmacological treatments

- –Education
- –Relaxation therapy
- –Stress management effective
- –Sleep hygiene
- –Eliminate triggers
- – Regular exercise

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Approach when treating headache

- Acute therapy(depending on the severity of the headache
- Preventive therapy (when the headaches are frequent or causing substantial disability)
- Biobehavioural therapy (to assist with coping with recurrent headaches)
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- Additional factors can contribute to exacerbations of headaches
    - including comorbid disorders and pubertal changes

Preventive therapy

- Use of prophylactic agents should be reserved for children with frequent or disabling migraine headaches
- The only agents demonstrating prophylactic efficacy in paediatric migraine in controlled trials are **propranolol** and **flunarizine**
- The evidence is insufficient to determine efficacy for the antihistamine cyproheptadine , the antidepressant amitriptyline , and the anticonvulsant agents valproic acid , topiramate for prevention of pediatric migraine
- The optimum duration of prophylactic therapy is uncertain
- Data are limited on the effectiveness of preventive agents in children

Anti-emetics which may be used in the treatment of Nausea and vomiting accompanying childhood migraine

Promethazine (phenergan)

Trimethobenzamide (Tigan)

Prochlorperazine

Methoclopramide

Hydroxyzine

Pharmacologic therapy for acute attack of migraine

- The best immediate therapeutic step is to place the patient in a **quiet, dark room** where he or she can rest. Sleep is often the most effective treatment.
- Intermittent use of ***oral analgesics*** is the mainstay of treatment.Both ***IBUPROFEN AND ACETAMINOPHEN*** have been shown to be safe and effective.
- Narcotics should be avoided.
- **The various "triptan" agents have not yet been approved for use in children, but trials in adolescents suggest that they may be safe and effective.**
- ***Sumatriptan*** is the only 5HT1 agonist that has proven effective for the treatment of children and adolescents with migraine with the nasal spray having the most favorable profile
- Nausea and vomiting - Can be relived by **antiemetic agents**

Triptans (5-HT1B/1D receptor)

- No approval for use in <16 years old
- Aborting the attack within 30 to 90 minutes in 70-80% of patients.
- Early studies on safety and efficacy are encouraging
- Caution when use in hemiplegic, basilar artery migraine and allergic reaction
- Can be given orally, Intranasal or IM
- Side effects- skin sensitivity?

Treatment of headache in Children and young adults

Acute Treatment Therapies for Pediatric Migraine: A Qualitative Systematic Review.

Patniyot IR[1,2], Gelfand AA[1,2].

- Of the available evidence, ibuprofen, prochlorperazine, and certain triptan medications are the most effective and safe agents for acute management of migraine and other benign headache disorders in the paediatric population. *(Oberian et al 2015)*

- Migraine headache is a neurologic disorder that occurs in 18% of women and 6% of men.
- Studies have shown that early treatment with large doses of medication work well for the treatment of moderate to severe migraine headache. (Harmon TP et al 2015)

Drugs for prophylaxis of migraine in children

DB, XO and placebo controlled trials

Drug	Dose	No.	results
Pizotifen	1-1.5mg / day	39	No difference
Propranolol	60-120mg/d	28	less often, nausea
Flunarizine	5mg/ day	70	reduce headache frequency
Topiramate	50-100mg / day	103	reduce headache days
Amitriptyline + CBT	1mg/kg / day	64	Better reduction in Headache
Amitriptyline + Education	1mg/kg/day	71	Less reduction in headache

Drugs in migraine prophylaxis NICE – update 2015

- Offer:

  Propranolol

  Or Topiramate

  Consider Amitriptyline

Preventative treatment should be used:

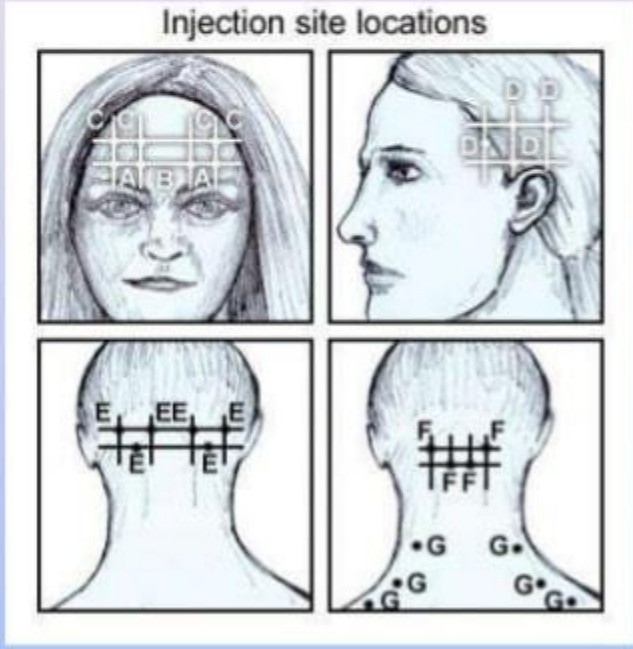
- regularly for at least 4-6 weeks
- If successful, continue for 6-12 months

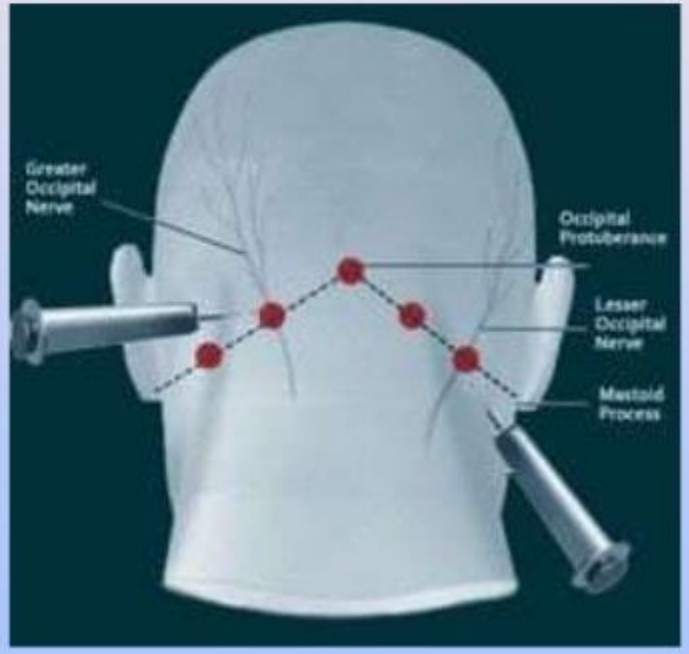
Other treatment

- PFO ligation (http://www.americanheadachesociety.org/assets/1/7/Schwedt.pdf)
- homeopathic remedies

- Botox (http://www.nhs.uk/news/2012/05may/Pages/nice-may-approve-botox-jab-for-chronic-migraine.aspx)
- Acupuncture

- Nerve block





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