


Is it real? Is it their eyes?
Evaluating children with headaches

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Objectives


- Describe types of headache found in the pediatric population including migraine, tension-type headaches, chronic daily headaches, sinus headaches and headaches that occur secondary to CNS pathology.
- Identify presenting symptoms associated with pediatric patients diagnosed with brain tumors.
- Compare pediatric to adult migraine.

Types of pediatric headache




Tension headache

- **Characteristics**
 - Band-like sensation around head with neck or shoulder pain
 - May last for days
 - Continuous pain; occurs on palpation posterior neck muscles
 - #1 cause of tension headache- stress
 - Associated with school; straight A students at risk
 - Poor eating habits, lack of sleep, depression, bullying classmates, family problems




Sinus headache

- **Characteristics**
 - Throbbing HA worse in morning
 - Pain varies with head position
 - May have referred pain
 - Hx nasal discharge, congestion
 - Fever may be present




Pediatric migraine

- **Characteristics**
 - Pulsating
 - Bilateral or unilateral
 - Moderate to severe in intensity
- **With aura 14-30% of children**
 - Reversible aura develops (4 minutes)
 - lasts up to one hr
 - pain 1 hr after aura
- May be accompanied by vomiting or photophobia
 - Lasts 1-48 hrs
 - Aggravated by physical activity




Pediatric headache Secondary to CNS pathology



Pathologies

- Intracranial mass/ tumor
- Meningitis
- Hydrocephalus
- Infection of the brain
- Encephalitis
- Hemorrhage
- Blood clots
- Head trauma


Meningitis




- May follow on the heels of a flu-like illness
- Hallmark sxs - **Fever, headache neck stiffness**
- Other symptoms
 - pain making it difficult to touch one's chin to chest
 - Nausea, vomiting, poor appetite
 - Confusion and disorientation (acting "goofy")
 - Drowsiness or sluggishness
 - Sensitivity to bright light
 - Poor appetite
 - Progression- In both bacterial and viral meningitis, symptoms develop quickly over hours or days

Pediatric Headaches linked to Intracranial mass

- Intracranial mass
 - HA most common symptom with increased intracranial pressure-> pressure displaces structures
 - Pain may be referred
 - Occurs less commonly in slowly growing tumor
 - Severe occipital HA exacerbated by sneezing, coughing
 - Pain worse in morning



Pediatric Headaches linked to Brain Tumors




Pediatric Brain Tumors Symptoms and signs

- Systemic symptoms
 - **Headache** 41%
 - Vomiting 12%
 - Unsteadiness 11%
 - **Visual difficulties** 10%
 - Educational/behavioral problems 10%
 - Others – abdominal pain, vertigo, lethargy

Pediatric Brain Tumors Symptoms and signs


- Visual symptoms
 - 43% double vision
 - 39% blurred vision
 - 6% photophobia
 - 4% strabismus
 - 3% abnormal eye movements
 - 1% tunnel vision



Pediatric Brain Tumors Symptoms and signs


- Neurological signs
 - 39% papilloedema
 - 49% cranial nerve abnormalities
 - 33% decreased visual field or VA
 - 48% cerebellar signs
 - 11% somatosensory signs

Papilledema



Cranial nerve testing

<ul style="list-style-type: none"> • CN II (Optic) <ul style="list-style-type: none"> • VA • Visual field • CN III • CN IV • CNVI 	<table border="0"> <tr> <td style="text-align: center;">Motor</td> <td style="text-align: center;">Sensory</td> </tr> <tr> <td>Temporalis (clench teeth)</td> <td>Ophthalmic (V1)</td> </tr> <tr> <td>Masseter (move jaw side-side)</td> <td>Maxillary (V2)</td> </tr> <tr> <td></td> <td>Mandibular (V3)</td> </tr> </table>	Motor	Sensory	Temporalis (clench teeth)	Ophthalmic (V1)	Masseter (move jaw side-side)	Maxillary (V2)		Mandibular (V3)
Motor	Sensory								
Temporalis (clench teeth)	Ophthalmic (V1)								
Masseter (move jaw side-side)	Maxillary (V2)								
	Mandibular (V3)								



Pediatric Case Presentation

Challenges in diagnosis in children

- Study of presenting features
- Retrospective chart review of 200 pediatric patients in UK
- Findings
 - Symptom interval before dxed –median 2.5 mos; Longer symptom interval with low grade tumors
 - Symptoms non-specific, mimic other dxes
 - Children typically present w/ less complete or clear symptoms than adults
 - HA most common symptom

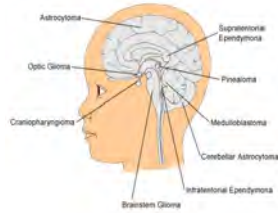
Wine, Ferris, Nathwani, Kennedy The presenting features of brain tumors: a review of 200 cases. Arch Dis Child 2006; 91(8):502-6.

Pediatric Brain Tumors

- Presentation usually marked by a constellation of symptoms (except for seizures)
- Questions about visual symptoms, educational and behavioral problems important
- Visual Assessment
- Growth and Head size, evaluation for increased intracranial pressure, motor dysfunction

Types of Brain Tumors

- Gliomas
 - Astrocytomas
 - Brain stem gliomas
 - Ependymomas
 - Optic Nerve Gliomas
- Primitive neuroectodermal tumors
 - Medulloblastoma
- Craniopharyngioma
- Pineal region tumor



Migraine Headache in Children



Pediatric migraine headaches

- Prevalence -3.5 to 5% all children
 - 90% children see neurologist for headache
 - Even infants can get migraines!
- Gender
 - affects males and females equally to age 7 yrs
 - Adolescence on - females more affected



Pediatric migraine variants

- Alice in Wonderland syndrome
- Hemiplegic migraine
- Ophthalmoplegic migraine
- Basilar artery migraine - dizziness, weakness, ataxia, severe occipital headache with vomiting
- Benign paroxysmal vertigo-recurrent head tilt ataxia

Pediatric vs Adult Migraine

- | | |
|---------------------------------|---|
| • 1-72 hrs duration | • 4-72 hrs duration |
| • Unilateral or bilateral | • Typically unilateral |
| • Cannot verbally describe pain | • Pain described as intense and pulsatile |
| • 49% pts have motion sickness | |

Pediatric Headache Triggers

- 20 to 50 percent pts sensitive to food triggers



Pediatric Migraine Triggers



- Nitrates
- Monosodium glutamate (MSG)
- Medications
- Tyramine – soy, smoked/cured meats, dried fruits, aged cheese
- Aspartame

Pediatric Migraine Physiological Triggers



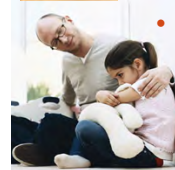
- Fatigue
- Hunger
- Glare
- Lack of sleep
- Physical exertion



Psychological Triggers



- Stress
- Anxiety
- Depression
- Grieving



Pediatric migraine

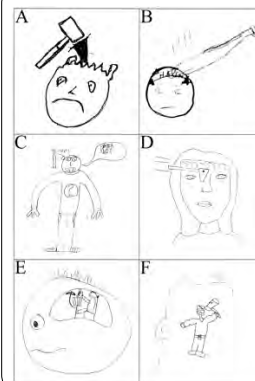
- Other triggers
 - Menstruation
 - Uncorrected refractive error
 - Reading
 - High altitude
 - Drugs- indomethacin

Pediatric migraine prognosis

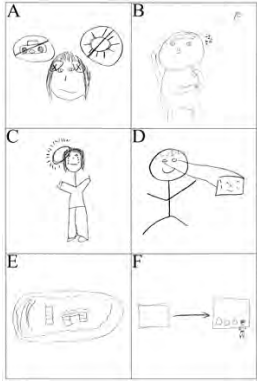
- Longitudinal study 73 children 40 yrs
 - Age of avg onset 6 yrs
 - Puberty - at least 2 yrs migraine-free
 - 60% children had migraines after 30 yrs
- Can remit spontaneously
- May reappear during major life changes
 - College
 - Getting married
 - Change in job

Diagnosing Pediatric Migraine

- Carl Stafstrom, neurologist at Tufts
- 226 children- Before taking any history to draw a picture of themselves having a headache: location of pain, what pain feels like, other changes and symptoms
- Without looking at drawings, a clinical evaluation and headache diagnosis was completed
- Drawings analyzed by two pediatric neurologists and classified as migraine or non-migraine
- Results- agreement migraine-87%; nonmigraine-91%



- Pediatric migraine
- Pain Described



Pediatric Migraine

Visual symptoms

Management


- Headache education
- Stress management –identify triggers; cope or remove
- Biofeedback
- Psychotherapy – when emotional factors
- Lifestyle- diet, envt
 - Regular schedule
 - Sleep, rest, seek darkness, quiet
 - Drink water

Management

Medications

- sumatriptan, acetaminophen, NSAIDs, beta-blockers, antidepressants, others
- Ibuprofen/acetaminophen more than 2x week can make headaches worse
- aspirin should not be given to those under age 15 years due to risk of Reyes syndrome

Headache Management



Case

- **CC** 8 yo female presents for evaluation of headaches in frontal area; HA had progressive onset; comes and goes; medium in severity; associated with reading
 - Also complains of blur OD, OS at distance and near
- **Ocular Hx** neg
- **Sys Hx** –ROS unremarkable
- **Fam Hx**- HTN grandfather (m); Diabetes – multiple; adult-onset
- **Dev Hx** full term pregnancy; began to walk and talk early
- **Acad Hx** good student

Case

- **VA**
 - SC OD 20/100 OS 20/100
 - CC OD -1.50 sph 20/20 OS -1.50 sph 20/20
- Cover Test D ortho Near 4 exophoria
- NPC 6 cm/15 cm 5 cm/17 cm
- Vergence Near BI x/12/8 BO x/14/8
- Accom Flippers 8 cycles per minute; slow on +
- Stereo 25” Randot
- Oc Health Pupils, SLX, IOP, DFE unremarkable

Case

- Diagnosis?
- HA – secondary to vision problem? Or not?
- Management
- Visual factors **accommodative excess** – consider more accommodative testing
- **Headache Diary**

Headache Logs and Diaries

Date Time Duration	Location ◦Forehead ◦Back of head ◦Band-like around headache with neck pain ◦Sides of Head	Activity when headache occurred ◦Reading ◦Physical exercise	Environ- ment	Food Beverage taken one hour before headache	Other Factors ◦Hunger ◦Fatigue ◦Lack of Sleep ◦Recent upper respiratory infection/cold ◦Emotional stress	Obtained Relief? ◦Yes ◦No
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Headache log

Date		
Warning sign		
Time begun		
Time ended		
Type of Pain: eg. pulsing, throbbing, etc.		
Intensity of Pain: Circle one Low 1 2 3 4 5 6 7 8 9 10 High		
Location: eg. between the eyes, back of head, etc.		
Effect of Treatment:		
Hours of Sleep Previous Night:		
Food/Beverages:		
Events Prior to Headache: eg. strenuous activities, elevated stress, etc.		

Headache History

- Location – Where is pain located?
- **Quality** – Describe the headache!
- Associated Symptoms
- Frequency
- Context – when experience headache
- Severity
- Modifying Factors –what makes it better? OR what does the patient do when headache occurs?
- Duration
- Previous interventions

Headache Questions

- Does anyone else in your family suffer from headaches?
- Do you notice visual disturbances before or after your headaches?
- Do you suffer from more than one type of headache?

Headache Questions

What triggers your headache: certain foods, certain physical activities, bright light, strong odors, change in temperature or altitude, noise, smoke, stress, and oversleeping?

What symptoms do you experience prior to the headache?

Are your headaches associated with your menstrual cycle?

Headaches Questions

- When did you start having headaches?
- How often do they occur?
- At what time of day? During the week or on weekends? How long do they last?
- Where is the pain? • Which word best describes it: throbbing, pounding, splitting, stabbing, and blinding?

Headaches Resources

- <http://www.headaches.org/pdf>
- <http://uhs.berkeley.edu/home/healthtopics/pdf/diary.pdf>
- <http://www.webmd.com/migraines-headaches/guide/headache-diary>
- <https://www.healthatoz.com/ppdocs/us/cns/content/atoz/tl/misc/headache-log.pdf>
- Apps
 - Headache diary \$1.99
 - iHeadache free

Pediatric headache



- When to image? Usually NO
- EXCEPT
 - HA < 6 mos unresponsive med tx
 - HA w/ papilledema, nystagmus, gait/motor abnormalities
 - Persistent HA; no fam hx migraine
 - Persistent HA w/episodes of confusion, disorientation
 - HA waking a child from sleep
 - + Fam Hx condition w/ CNS lesions

Questions??

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