



HEADACHES IN SCHOOL CHILDREN

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SWEDISHAMERICAN NEURO AND HEADACHE CENTER

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- ◉ Neshor Asner MD, Board certified neurosurgeon



OUTLINE

- ◉ Epidemiology
- ◉ Migraine and the primary headaches
- ◉ Red flags
- ◉ Acute headache treatment
- ◉ Impact of headache
- ◉ Abdominal migraine
- ◉ Concussion and headache

PREVALENCE OF HEADACHE IN CHILDREN

- ◉ Age 3: 3-8%
- ◉ Age 5-7: 19%
- ◉ Age 7-15: 57-82%



PREVALENCE OF MIGRAINE THROUGH CHILDHOOD

Age	3-7 yr	7-11 yr	15 yr
prevalence	1.2-3.2%	4-11%	8-23%
Gender ratio	B>G	B=G	G>B



PRIMARY HEADACHE DISORDERS

- ◉ Migraine without Aura
- ◉ Migraine with Aura
- ◉ Cluster Headache
- ◉ Tension-Type Headache



MIGRAINE WITHOUT AURA

- ◉ Formerly Common Migraine
- ◉ IHS criteria, pediatrics—Pain characteristics (at least 2 required)
 - Unilateral pain or **bilateral** or frontotemporal (not occipital)
 - Throbbing/pulsating
 - Moderate to severe in intensity
 - Worsened by physical activity

ASSOCIATED CHARACTERISTICS

- One required:
 - Photophobia and phonophobia (pediatrics, may be inferred by behavior)
 - Nausea or vomiting
- Duration of 2-72 hours



ID MIGRAINE

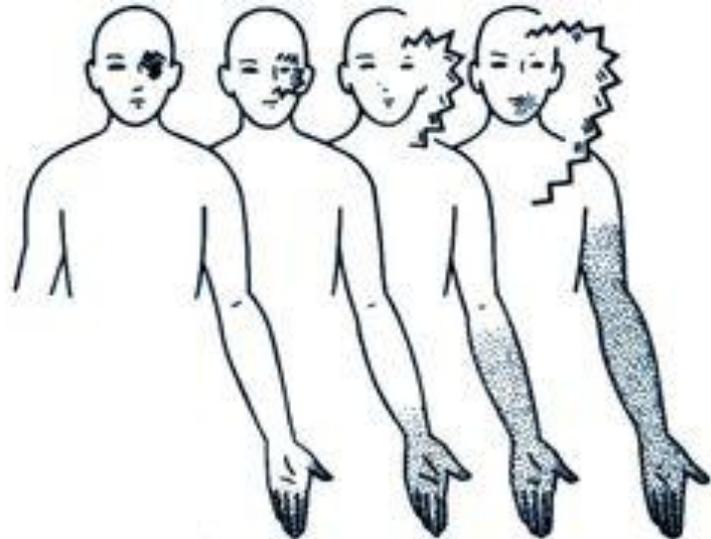
○ PIN

- Photophobia
 - Impairment
 - Nausea
- Yes to 2/3 of these sx's gives an 81% probability of migraine
- Presence of all 3 portends a 93% probability

Lipton RB, Neurology 2003

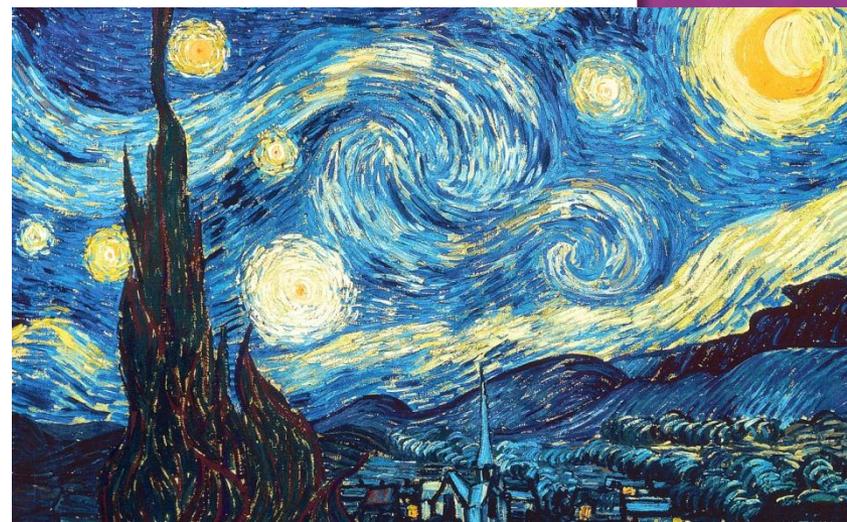
AURA

- ❑ Focal neurologic symptoms that precede or accompany a migraine headache
- ❑ Only 24-43% of migraineurs have aura
- ❑ Only 10% of migraine with aura patients have the aura with every headache



AURA

- Symptoms develop over 5 or more minutes
- Lasts less than 60 minutes
- The headache appears before the end of the aura or more commonly up to 60 minutes after

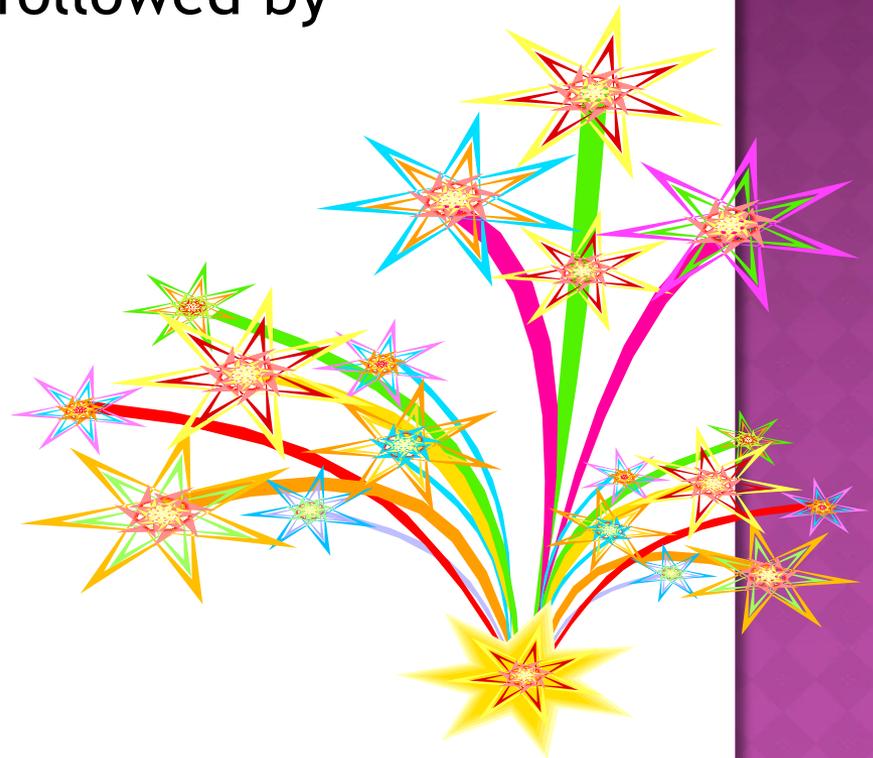


2013 MIGRAINE WITH AURA POWERFUL PREDICTOR OF CARDIOVASCULAR EVENTS

- New findings of the Women's Health study: migraine with aura is, after hypertension, the **strongest** predictor of the risk of stroke and heart attack
- 1400 woman suffered from Migraine with aura
- During 15 year follow-up 1000 had a heart attack, stroke or died of CVD

AURA SYMPTOMS

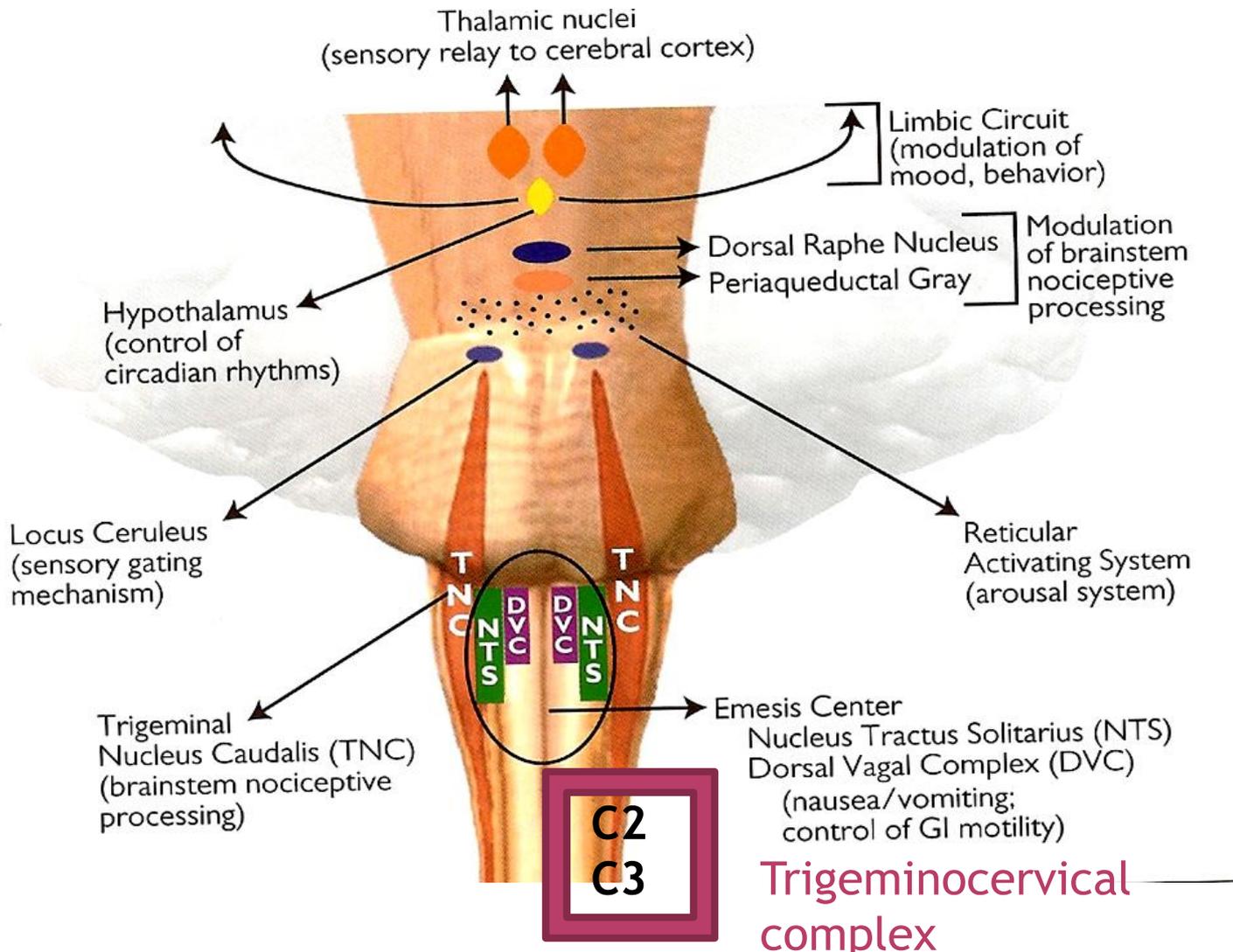
- Visual: flickering lights, dark spots (scotoma), or wavy or jagged lines (79-99%)
- Sensory: pins and needles, followed by numbness (30-40%)
 - Face, lips, tongue
 - Hands and arms
- Speech disturbance (9-20%)



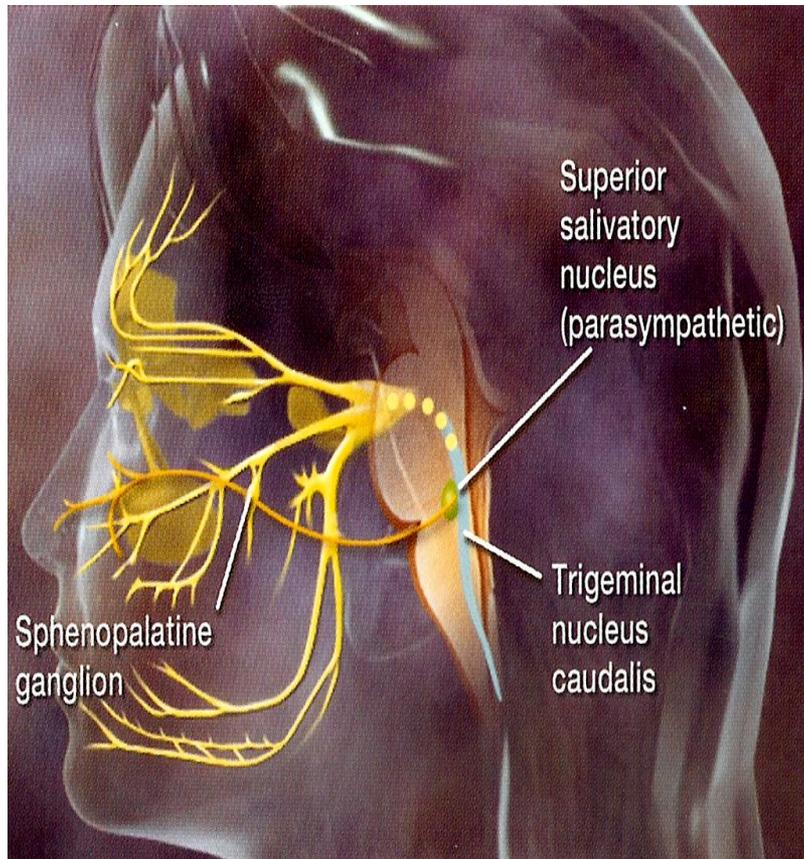
NECK PAIN COMMONLY OCCURS IN MIGRAINE ATTACKS



CERVICAL PAIN IN MIGRAINE



SINUS SYMPTOMS



○ Migraine activation of the TNC can lead to cranial PSNS activation thus causing:

- Rhinorrhea
- Congestion
- Lacrimation

SINUS HEADACHE

- NOT a primary headache disorder
- Secondary diagnosis arising from acute bacterial sinusitis
- Associated with the symptoms of:
 - Purulent nasal drainage
 - Facial pain
 - Congestion
 - fever

TENSION TYPE HEADACHE

- ◉ Bilateral location
- ◉ Pressure, tightening character (nonpulsating)
- ◉ Mild to moderate pain
- ◉ May inhibit but not prohibit activity



TENSION TYPE HEADACHE

- ⦿ Not aggravated by routine physical activity
- ⦿ No nausea nor vomiting
- ⦿ Minimal light or sound sensitivity (not both)
- ⦿ Lasts 30 minutes to 7 days



TENSION TYPE HEADACHE

- ◉ Episodic type occurs less than 15 days per month
- ◉ May be triggered by insomnia, stress, fatigue, fever, hunger, odors, and red wine
- ◉ NOT caused by:
 - Emotional stress
 - Muscle tension
 - Muscle contracture



MEDICATION OVERUSE HEADACHE

- ◉ Diffuse bilateral daily headache
- ◉ Aggravated by mild exertion
- ◉ Onset with awakening or in the early morning
- ◉ No response to preventive therapy
- ◉ Tolerance to acute abortive medications



WORRISOME HEADACHES



Magnetic resonance imaging showing brain tumor (arrow)

RED FLAGS-OMINOUS SIGNS

- ⦿ First or worse headache—unusual severity
- ⦿ Sudden or rapid escalation within minutes
- ⦿ Mental status changes
- ⦿ Onset during exercise
- ⦿ Posterior radiation below the neck
- ⦿ Stiff neck
- ⦿ Onset after 50 y/o or less than 5 y/o
- ⦿ Abnormal neurological examination

RED FLAGS

- Associated constitutional symptoms
 - Fever
 - Weight loss
 - Recent infection
- Change in character or frequency of existing headache
- Refractory to two different therapies



PEDIATRIC RED FLAGS

- ◉ Head trauma
- ◉ Toxic exposure
- ◉ Presence of a shunt
- ◉ Café au lait spots, petechiae, hypopigmentation



GOALS OF ACUTE THERAPY

- ◉ Relieve pain quickly and completely
- ◉ Relieve associated symptoms
- ◉ Return to normal functioning
- ◉ Reduce socioeconomic costs
- ◉ Improve quality of life
- ◉ Prevent recurrence



ACUTE MEDICATIONS

- ◉ Acetamenophen 15 mg/kg every 4 hours
- ◉ Ibuprofen 10 mg/kg every 6 hours
- ◉ Benadryl 5 mg/kg/24 hr divided every 6 hrs
- ◉ Caffeine 50 mg



ANALGESIC USE LIMIT (PALM BEACH HEADACHE CENTER)

- ◉ No more than 10 tablets of analgesic per month for a young child
- ◉ No more than 20 tablets per month for an adolescent
- ◉ No more than 2 headaches treated with these parameters per week

*Headache in Children and Adolescents 2nd Ed.,
Winner et al. 2008*

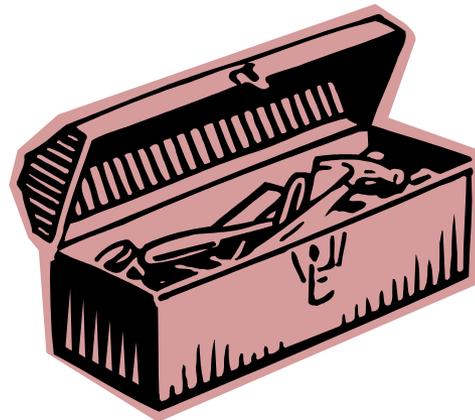
ORAL NSAIDS (ADULT)

GROUP 2 US HEADACHE CONSORTIUM 2000

- Fenoprofen (Nalfon) 600 mg TID prn
- Flurbiprofen (Ansaid) 100 mg BID prn
- Ketoprofen (Orudis) 75 mg TID prn
- Mefenamic acid (Ponstel) 250 mg QID prn
- Naproxen 500 mg BID
- Naproxen Sodium 550 mg BID
- Diclofenac 50 mg oral suspension (Cambia)

THE TRIPTANS

- ◉ Sumatriptan -Imitrex
- ◉ Naratriptan—Amerge
- ◉ Zomatriptan—Zomig
- ◉ Rizatriptan—Maxalt
- ◉ Almotriptan—Axert
- ◉ Frovatriptan—Frova
- ◉ Eletriptan--Relpax



RIZATRIPTAN

- Pediatric indication 2010 age 6 to 17 years
- 5 mg dosage for children weighing less than 40 Kg
 - If child the <40 Kg is taking propranolol rizatriptan is contraindicated
- 10 mg for children greater than 40 Kg
 - If the >40 Kg child is taking propranolol the rizatriptan dose is 5 mg

ALMOTRIPTAN

- ◉ Pediatric indication 2009 for ages 12-17 years
- ◉ Initial dose 6.25 mg or 12.5 mg
- ◉ May repeat in 2 hours



SIDE EFFECTS

- ◉ Tingling
- ◉ Warmth
- ◉ Chest heaviness
- ◉ Dizziness
- ◉ Flushing
- ◉ Neck and throat tightening
- ◉ Somnolence
- ◉ Fatigue
- ◉ Dry mouth
- ◉ Nausea



HEADACHE TRIGGERS



Some Common Triggers of Migraine

Foods



Alcohol, especially red wine

Caffeine

Caffeine withdrawal

Canned figs

Chicken livers

Chocolate

Citrus fruits

Fish, especially smoked



MSG^a

Nitrates^b

Nuts

Pickled herring

Prolonged lack of food

Skipping meals altogether

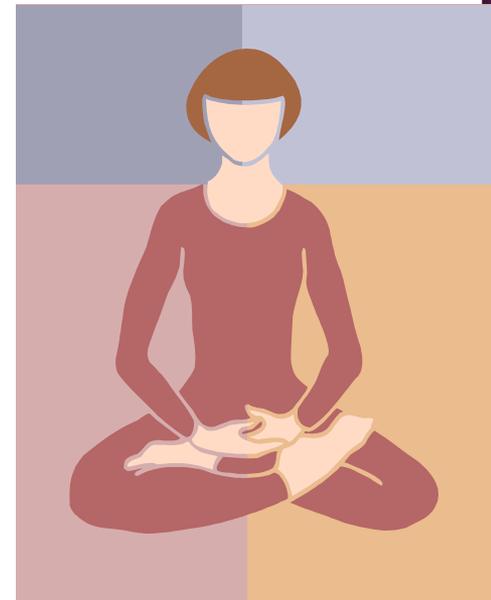
Some carbonated beverages (aspartame)

Some dairy products (yogurt, aged cheese)

obesity

OTHER THERAPIES

- ◉ Biofeedback
- ◉ Cognitive behavior therapy
- ◉ Meditation & relaxation
- ◉ Visualization
- ◉ Yoga
- ◉ Exercise
- ◉ Therapeutic blocks
- ◉ Massage
- ◉ Acupuncture



SOCIAL/WORK/SCHOOL IMPACT (OVER 3 MONTHS)

- 25.3% Missed one day of work/school
- 28.1% Work/school productivity <50%
 - Average of 3 days lost work day equivalents
- 29.1% Missed family/social activity
- 47.7% Did no housework

Lipton RB, Neurology 2007

CHILDREN WITH MIGRAINE: Missed school days

- ◎ 2.75 million school days missed per year

Stang PE and Osterhaus JT. Headache 1993;33

Cady RK Headache 1996;7



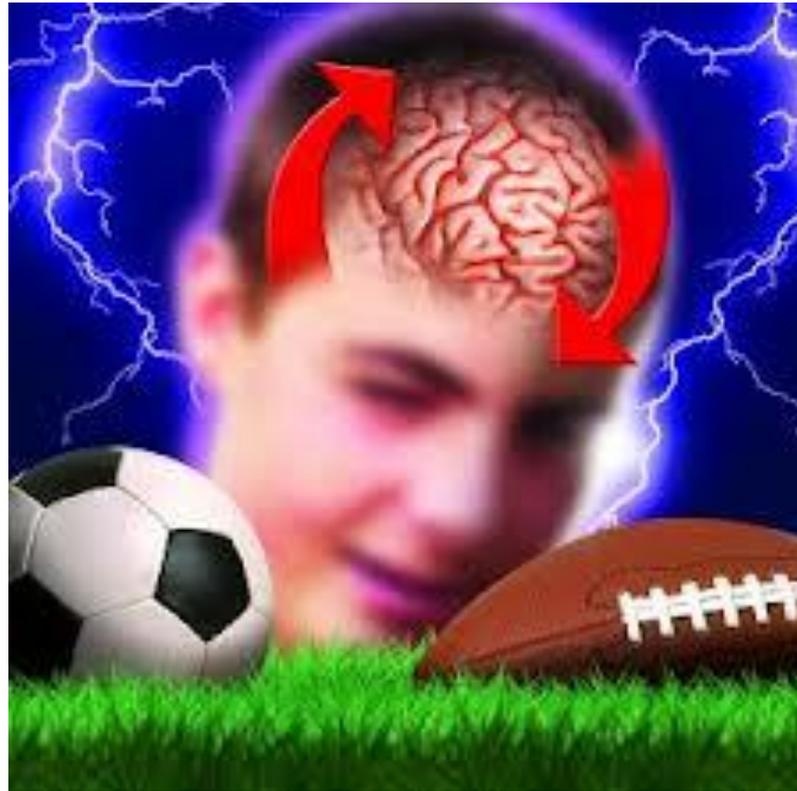
ABDOMINAL MIGRAINE

- ◉ Up to 12% of school children aged 3 to 15 years with recurrent attacks of abdominal pain
- ◉ Peak age of onset 10 years
- ◉ The pain is midline, periumbilical and poorly localized
- ◉ The character is dull or sore
- ◉ Severity is mild to moderate lasting 2-72 hours
- ◉ Complete resolution between attacks

ABDOMINAL MIGRAINE

- Associated features
 - Pallor
 - Lethargy
 - Anorexia
 - Nausea, vomiting (less common)
- Headache attacks occur later in life for 31-50%
- 1/3 have attacks in adolescence or early adult life

CONCUSSION



STATS: EPIDEMIOLOGY

- Estimated 1.6 to 3.8 million sports related traumatic brain injuries/year in the US
- Half of the concussions are not noticed and unreported
- Concussions account for 9-13% of all sports related injuries

CONCUSSION DEFINITION

- ⦿ Complex neurologic changes affecting the brain induced by trauma.
- ⦿ Caused by a direct blow to the:
 - head itself *or*
 - the body with traumatic forces transferred to the head
- ⦿ Most do **not** involve loss of consciousness
- ⦿ Mild end of the traumatic brain injury spectrum.

PHYSICAL SYMPTOMS

- ◉ Headache
- ◉ Nausea
- ◉ Vomiting
- ◉ Balance problems
- ◉ Dizziness
- ◉ Visual problems
- ◉ Fatigue
- ◉ Sensitivity to light
- ◉ Sensitivity to sound
- ◉ Numbness/tingling



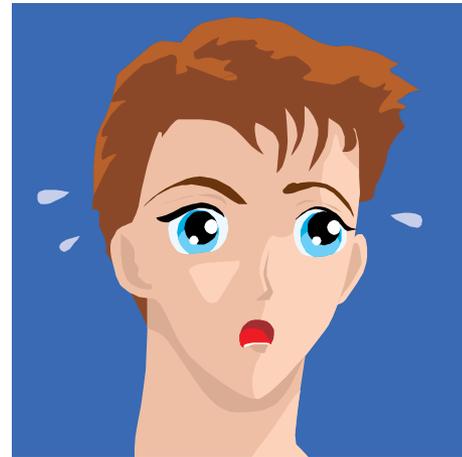
COGNITIVE SYMPTOMS

- ◉ Feeling mentally foggy
- ◉ Feeling slowed down
- ◉ Difficulty concentrating
- ◉ Difficulty remembering



EMOTIONAL SYMPTOMS

- ◉ Irritability
- ◉ Sadness
- ◉ More emotional
- ◉ Nervousness



SLEEP SYMPTOMS

- ◉ Drowsiness
- ◉ Sleeping less than usual
- ◉ Sleeping more than usual
- ◉ Trouble falling asleep



TREATMENT OF CONCUSSION

- Physical and cognitive rest
- Limit exposure to bright screens
 - Television
 - Cell phone
 - Computer
- Lighter work or school load
- Minimal medications
- Encourage good sleep hygiene



