Etiologies

- Etiologies included but not limited to: food, fever, viral, metabolic, withdrawal, and pharmaceutical
- International Headache Society Classifications
History: Questions to ask

- Character of pain
- Mode of onset
- Mode of offset
- Time of onset
- Relieving factors
- Aggravating factors
History: Questions to ask

- Precipitating factors
- Frequency of attacks
- Duration of attacks
- Associated symptoms
- Family history of headache
- Allergies
“Headache” history

- How long have the headaches been occurring?
  - < or > 6 months?

- What is the temporal pattern?
  - ACUTE
  - ACUTE-RECURRENT (episodic)*
  - CHRONIC PROGRESSIVE
  - CHRONIC NON-PROGRESSIVE
  - aka Chronic daily headache
Headache characteristics

- **Frequency and duration**
- Location
- Quality of pain
- **Warning signs or promontory features**
- Associated symptoms
- Aggravating factors

minutes
hours
days
weeks
Headache characteristics

- Frequency and duration
- Location
- Quality of pain
- Warning signs or promontory features
- Associated symptoms
- Aggravating factors
Headache characteristics

- Frequency and duration
- Location
- **Quality of pain**
- Warning signs or premonitory features
- Associated symptoms
- Aggravating factors

pounding
stabbing
pressure
Headache characteristics

- Frequency and duration
- Location
- Quality of pain
- **Warning signs or promontory features**
- Associated symptoms
- Aggravating factors

- Waking HA
- Waking Vomiting
- Vomiting > Nausea
- Aggravating factors
- Altered Mental Status
Headache characteristics

- Frequency and duration
- Location
- Quality of pain
- Warning signs or prominent features
- Associated symptoms
- Aggravating factors

nausea/vomiting
sensory
photo/phonophobia
motor
Headache characteristics

- Frequency and duration
- Location
- Quality of pain
- Warning signs or promontory features
- Associated symptoms
- **Aggravating factors**

stress
lifting
straining
coughing
Headache
Historical Features

- **Pattern** (acute, recurrent, progressive, non-progressive)
- **Length of illness** (acute vs. chronic)
  - Frequency, duration
  - Location (holocephalic, bifrontal, unilateral, posterior)
  - Quality of pain (throbbling, stabbing, pressure)
  - Time of day (wakes from sleep, early Morning)
- **Associated Features**
  - Nausea, vomiting, abdominal pain
  - Visual aura, diplopia
  - Photo / phonophobia
  - Vertigo, dizziness
  - Motion sickness, nocturnal leg cramps
5 key features of neurological exam

- Optic discs
- Eye movements
- “Pronator” drift
- Tandem gait
- Deep tendon reflexes

99% of HA sufferers with BAD stuff have 1 of these signs
Barriers To Success

- Limited physician training
- Limited access to care
- Inappropriate or incomplete treatment
- Underestimation of morbidity
“Warning Signs”

- first or worst HA ("thunderclap headache")
- progressive or new daily persistent HA
- age >50 or <5 years
- HA associated with fever, rash, stiff neck
- HA associated with abnormal mental status or abnormal neuro exam
“Warning Signs”

- HA associated with papilledema
- new HA in patient with h/o malignancy, immunosuppression/HIV, pregnancy
- awakening because of HA
- HA with Valsalva or exertion
Seven danger signals of an ominous headache

- A “first” headache
- Headache due to exertion
- Headache with fever
- Headache in a drowsy or confused patient
Seven danger signals of an ominous headache

- Nuchal rigidity or meningeal signs
- Abnormal physical signs
- Headache in a patient who “looks ill”
Physical Exam

- Gait assessment
- Vital signs
- Fundoscopic exam
- Facial symmetry
- Head & Neck structures
- Deep tendon reflexes
- Plantar response
- Limb strength
Relevant Muscles

- Trapezius
- Sternocleidomastoid
- Temporalis
- Occipitofrontalis
- Suboccipital muscles
- Masseter
Relevant Muscles

- Medial & Lateral Pterygoid
- Anterior & Posterior Digastric
- Fascial muscles
- Splenius Capitis
- Posterior Cervical musculature
- Deep Anterior Cervical musculature
Cervical Dysfunction

- Upper cervical nerves possess fibers for pain from the lower part of the occipital sinus, vertebral and posterior meningeal arteries, and the dural floor of the posterior fossa (C1, C2, C3)
So... *to scan or not to scan...*

- Headache diagnosis & normal exam - NO
- Worrisome history, no clear diagnosis - YES
- Abnormal exam - YES
- Seizures - YES
Migraine Headache

Etiology:

- Hereditary component
- Women can have it associated with menses
- Lasts hours to 3 or 5 days
- Not correlated with personality types “A” or neuroses
- The worsening or migraine that occurs during periods of intense nervousness, anxiety, and depression is usually due to the superimposition of a tension headache
- Vascular spasm followed by vasodilatation
Migraine Pathophysiology

- Migraine is a *brain disorder*
- Brain becomes hypersensitive and overly responsive to stimuli
- The *trigeminal nerve* appears to be a key pathway
Migraine Cascade

- Vasoactive substances inflame vascular and meningeal tissue, activate trigeminal axons
- Perivascular release of vasoactive neuropeptides; spreading neurogenic inflammation
Migraine Cascade

- The inflammatory response spreads along the trigeminovascular system
- Pain signals reach trigeminal nucleus caudalis and other pain systems
- Dorsal raphe nucleus may modulate migraine pain
The Migraine Attack

Intensity of Symptoms or Phases

Prodrome
Aura
Headache
Postdrome

Associated Features

Time
Prevalence of migraine w/o aura

Stewart, Linet et al. Am J Epidem. '91
Migraine Headache: Signs & Symptoms

Classic Migraine

- More female than male
- Character: throbbing pain
- Location: unilateral can be bilateral
- Associated: preceded with visual disturbances and less often with hemisensory disturbances, hemiparesis, or aphasia
Migraine Headache: Signs & Symptoms

Classic & Common Migraine

- Women are more affected than men
- Character: throbbing pain
- Location: unilateral can be bilateral
- Associated: photophobia and or phonophobia; tension headache often concomitant
- Aggravated: red wine, nuts, aged cheese, chocolate and caffeine containing beverages
Migraine Headache: Diagnosis & Treatment

- Treatment would include stabilizing cervical/thoracic dysfunction and associated concomitant tension headache
- Prevention by avoiding predisposing factors, decreasing stress, maintaining sleep regularity
- Biofeedback maybe helpful
- Response to ergot therapy
- Drug treatment is widely varied (caffeine, NSAIDS, barbiturates, narcotics, beta blockers, calcium channel blockers, sedatives, and more...
Cluster Headache

Etiology

- Aka Histamine headaches
- Disturbed hypothalamic biorhythm
- Excess smoking and drinking may precipitate via sphenopalatine irritation
- Unilateral
- Cervical somatic dysfunction with irritation of the spinal accessory nerve
Cluster Headache

- “CH face”: leonine face, furrowed and thickened skin with prominent folds, a broad chin, vertical forehead creases, and nasal telangiectasias.
- Typically tall and rugged-looking
Cluster Headache: Signs & Symptoms

- Character: excruciating pain often stabbing
- Location: usually near one eye
- 2 hours after sleeping
- 1 to 2 hours “seasonal”
- Associated: tearing, flushed face, nasal congestion, conjunctival congestion (ANS)
- Males affected more than females
- Onset: begins at 20 – 40 years of age
Cluster Headache: Signs & Symptoms

- Attacks last 30 – 90 minutes daily for days and then disappear for months (Headache “vacation”)
- Alcohol can precipitate but only during an active cycle, not during “vacations”
- Some are so painful that they can lead to suicide
Cluster Headache: Prevention & Treatment

- Treatment would should include stabilization of cervical dysfunction
- Counsel against use of triggers i.e. alcohol
- O2 amount depends on delivery
  - Face mask full
  - Nasal cannual 7L
- Drug treatment is widely varied
- Can be at the brink!
Organic origin, Subarachnoid hemorrhage

Etiology

- Ruptured aneurysm
- Arteriovenous malformation
- Trauma
Organic origin, Subarachnoid hemorrhage

**Signs & Symptoms**
- Anyone but tends to be a younger person
- Character: full-blown catastrophic headache
- Location: Holocaine “thunder-clap headache”
- Duration: continuous progressive
- Personality change get very irritable
- Associated: photophobia, retinal hemorrhages, nuchal rigidity, Brudzinski’s sign, Kernig’s sign, obtunded collapse
Organic origin, Subarachnoid hemorrhage

Diagnosis
- Physical examination
- CT may show blood and aneurysm
- Lumbar puncture may show bloody CSF
- MRI
Organic origin, Subdural hemorrhage

Etiology

- Acute vs. Chronic
- Arteriovenous malformation
- Secondary events i.e. tumors
- Trauma
Organic origin, Subdural hemorrhage

Signs & Symptoms

- Anyone but tends to be an older person
- Character: full-blown catastrophic headache
- Location: Holocaine
- Duration: continuous progressive
- Personality change: get very irritable
- Associated: photophobia, retinal hemorrhages, nuchal rigidity, Brudzinski’s sign, Kernig’s sign, obtunded collapse
Organic origin, Subdural hemorrhage

Diagnosis
- Physical examination
- CT scan
- Lumbar puncture may show bloody CSF
- MRI
Organic origin, Meningitis

Etiology

- Virus
- Bacteria
- Fungus
- Tuberculous
Organic origin, Meningitis

Signs & Symptoms

- Anyone is susceptible
- Meningococci, *Haemophilus influenzae* type B, pneumococci or mumps virus infections
- Character: cephalgia is intense, steady, and deep
- Location: holocranial pain associated with retro-orbital pain which is aggravated with eye movement
- Onset: sub-acute or acute
- Associated: fever, generalized convulsions, varied levels of consciousness, nuchal rigidity, Brudzinski and Kernig’s signs
Organic origin, Meningitis

Diagnosis

- Headache with fever and nuchal rigidity
- CBC w differential
- LP reveals pleocytosis, increased protein, and low glucose
- CT scan after Tx is underway to R/O brain abscess and subdural empyema
Organic origin, Increased Intracranial pressure

Etiology

- Increased volume
- Increased venous pressure
- Obstruction to flow/absorption of CSF
Organic origin, Increased Intracranial pressure

Signs & Symptoms

- Any age
- Location varies
- HA is severe (progressive nocturnal)
- HA occur with coughing, sneezing, valsalva effort
- Associated findings include early stage loss of venous pulsations late stage papilledema, obtunded, focal neurologic signs & symptoms
Organic origin, Increased Intracranial pressure

Diagnosis

- CT
- MRI
- Avoid LP
Pseudotumor Cerebri

- Intermittent headache
- Variable intensity
- Normal exam except papilledema
- Normal imaging
- CSF pressures > 200 cm H$_2$O
Pseudotumor Cerebri - Associated History

- Mastoid or ear infection
- Menstrual irregularity
- Steroid exposure
- Retro-orbital or vertex headache
- Vision fluctuation
- Unilateral or bilateral tinnitus
- Constriction of visual fields
- Weight gain
Pseudotumor Cerebri – Treatment

- Reduce CSF production
  - Furosemide
  - Acetazolamide
- Weight loss
- Low salt diet
- CSF shunting
- Incision of optic nerve sheath
ICP Headache

- Raised or lowered ICP usually from LP
- Worse with sitting or standing
- Vertex or occipital, pulling, steady
- Low ICP headache Usually resolve spontaneously
- Shunts or Cranial Vault remodeling for raised ICP
LP: Opening pressure ~ 400 mm H2O

- Normals
  - 2 WBC
  - Glucose 60
  - Protein 10
Idiopathic Intracranial Hypertension
aka: *Pseudotumor cerebri*
Organic origin, Hypertension

- Usually no HA’s until DBP > 120 mm Hg
- Major causes of acute severe hypertension: drugs, pheochromocytoma, neurogenic
- Associated findings include: retinopathy, convulsions, confusion or stupor evolving over several days
Organic origin, Hypertension

Diagnosis

- History/Physical examination
- Labs – 24 hour urine if suspect pheo
- Imaging if pheo or other pathology is indicated
Organic origin, Vascular

Etiology

- Temporal (giant cell) arteritis
- Dissection of a vessel
Organic origin, Vascular

Signs & Symptoms of Temporal Arteritis

- Most common in females > 50 years of age
- Character: throbbing and sharp, burning pain, persistent
- Location: focal headache in the temporal or frontal-occipital region
- Onset: gradual and progressive
- Aggravated: headache worse at night and with cold
- Associated: weight loss, fever, fatigue, polymyalgia rheumatica, monocular visual loss, jaw claudication
Organic origin, Vascular

Diagnosis of Temporal arteritis

- Increased sedimentation rate
- Biopsy
Organic origin, Vascular

- Dissections
  - Carotids internal and external
  - Vertebral
Organic origin, Vascular

Signs & Symptoms (Dissection of vessel)

- Tend to be younger patients under 50
- Severe, localized HA
- History of trauma or vigorous exertion
- Mechanical forces (trauma, blunt injury, stretching), underlying arteriopathies (Ehlers-Danlos syndrome IV, other connective tissue disorders/aberrations)
Organic origin, Vascular

- Diagnosis
- Labs not necessary unless running CT w/ contrast (creatinine level)
- CTa,
- Angiography
- MRI
- Ultrasound
Organic origin, Acute Purulent Sinusitis

Etiology

- Infection
- Allergy
Organic origin, Acute Purulent Sinusitis

- Involving the frontal, maxillary, sphenoidal, or ethmoidal sinuses
- Risk factors are asthma, allergies polyps, exposure to smoke or other irritant
- Patient is usually very ill, with a severe localized HA for hours or days, tender sinuses; often misdiagnosed as tension HA or common migraine but may have these as concomitant HA
Organic origin, Acute Purulent Sinusitis

Diagnosis

- History/Physical
- CT
- CBC w Differential if over 10 days
Tension-Type Headache

- Most common headache syndrome
- Episodic < 15 days per month
- Chronic > 15 days per month
TTH - Characteristics

- 30 minutes to 7 days
- Pressing or tightening
- Mild to moderate pain
- Variable location, often bilateral
- Nausea and vomiting rare
Tension Headache
Etiology

Skeletal components

- Somatic dysfunctions of the upper cervical unit are going to impinge on the upper cervical nerves which have afferents in the cranium and dura
Tension Headache

Etiology

Muscular components

- Can be explained by trigger point reflex mechanisms. A myofascial trigger point is a focus of hyperirritability within a taut band of skeletal muscle or the associated fascia that, when compressed, is locally tender and, if sufficiently hypersensitive, gives rise to referred pain and tenderness, and sometimes to referred autonomic phenomena and distortion of proprioception.
Tension Headache
Etiology

Muscular components

- Trigger points can result directly from ischemia due to chronically tense muscles, acute overload, overwork fatigue, direct trauma, and chilling.

- Trigger points can result indirectly from other trigger points (a.k.a. latent trigger points), visceral disease, arthritic joints, and by emotional distress.
Tension Headache

Etiology

Soft tissue components

- Ligaments can refer pain to sclerotomes which need to be addressed to completely resolve the somatic dysfunction

Lymphatics

- Need to free up the thoracic inlet to allow drainage of fluids
Tension Headache: Trapezius

- The trapezius can have many trigger points but the ones located in the upper fibers are most relevant for cephalgia.

- Pain referral pattern: Posterolateral aspect of the neck, mastoid process, temple and back of the orbit, and the angle of the jaw.
Tension Headache: Trapezius

- The patient can often be misdiagnosed as having cervical radiculopathy or atypical facial neuralgia. The normally minimal antigravity function of the upper trapezius is overstressed by any position or activity in which the trapezius helps to carry the weight of the arm for a prolonged period.

- The muscle can also be strained by chronic injury due to overload, carrying a heavy backpack, long telephone calls, and sleeping prone with the head turned to one side.
The trapezius can also entrap the greater occipital nerve which innervates the skin of the scalp and the semispinalis capitis muscle.
Tension Headache: SCM
Sternal division

- Pain referral pattern: supra-orbital and deep within the orbit, occipital ridge, and vertex
- Associated autonomic findings: excessive lacrimation, reddening of the conjunctiva, apparent “ptosis,” and visual disturbances
Tension Headache: SCM Clavicular division

- Pain referral pattern: frontal area which extends across the forehead to the other side, and posterior auricular
- Associated proprioceptive findings: spatial disorientation
Tension Headache: SCM

- The SCM trigger points can be activated by sleeping on two pillows and keeping the neck in a flexed position, or by keeping the neck in an extended position as in painting a ceiling or sitting in the front row of a theater with a high screen or elevated stage. The SCM is often injured in a “whiplash” injury that might occur in an automobile crash.
Tension Headache: Temporalis

- Pain referral pattern: widely throughout the temple, along the eyebrow, and behind the eye

- Temporalis trigger points may be activated by bruxism, direct trauma such as a fall or an impact to the cranium. The temporalis muscle can also be activated secondary to spasm in the masseter muscle
Tension Headache: Occipitofrontalis

- Frontal division pain referral pattern: upward and over the forehead on the ipsilateral side
- Occipital division pain referral pattern: laterally, diffusely over the back of the head and with pain deep in the orbit
TTH - Treatment

- Cervical/thoracic segmental dysfunction correction
- Soft tissue work
- Stress management
  - Biofeedback
  - Stress reduction
  - Posture correction
- Exercise
Chronic Daily Headache

- 6 days a week for 6 months
- Bilateral, frontal or occipital
- Non-throbbing
- Moderately severe
- Due to overuse of analgesics
- Transformation of migraine or TTH
Chronic Daily Headache

Features

- > 15 headaches / month
- Frequency of headaches in adolescents
  - Daily 76%
  - > 15 month 24%
- 0.7 - 2 % of migraine headaches
Chronic Daily Headache
Patient Profile

- Female: Male 3 : 1
- Average age at dx: 14 yrs
- Age of onset: 11 years
- A / B students in: 86%
- Mod-severe pain: 88%
Management of CDH

- Behavioral Therapies
- Lifestyle Changes
- Rx
Chronic Daily Headache Management

- **Reassurance**: THE most important tool
- **AVOID** homebound schooling (get them out and about)
- **Life-style adjustments**
  - **Sleep**:
    - Regular sleep schedule
    - Not too much, not too little
  - **Diet**:  
    - Moderate or eliminate caffeine
    - No missed meals
    - Lots of liquids - Hydrate
  - **Exercise**: 30 minutes a day
Management of CDH

- Chiropractic care
- Soft tissue work
- Bio-behavioral strategies & decrease caffeine
- Stop OTC analgesic overuse
  - AVOID ibuprofen, acetaminophen
- Abortive-analgesic agents:
  - naproxen
  - “triptans” for peaks
- Daily prophylaxis
  - Amitriptyline
  - Topiramate
CDH - Treatment

- Patient understanding
- Remove causative medication
- Avoid substitution
- Maybe on these
  - Antidepressants (careful)
- Adjuvant therapy
Trigeminal Neuralgia

- Paroxysmal pain – seconds to < 2 min
- Distributed along 5th cranial nerve
- Asymptomatic between attacks
- Trigger points (eating, washing, brushing)
- Also known as Tic Doloureux
- Most common in over 50s
Trigeminal Neuralgia - Treatment

- Chiropractic care/ soft tissue work
- Cold laser
- Medical Management
  - Carbamazepine
  - Gabapentin
  - Baclofen
  - Phenytoin
  - Valproate
  - Chlorphenesin

- Adjuvant
  - TCAs
  - NSAIDs
  - Surgery for refractory cases
Glossopharyngeal Neuralgia

- Similar to Trigeminal Neuralgia
- Unilateral pain
  - Pharynx
  - Soft palate
  - Base of tongue
  - Ear
  - Mastoid
- Treatment as for Trigeminal Neuralgia
Atypical Facial Pain

- Diagnosis of exclusion
- ? Psychogenic facial pain
- Location and description inconsistent
- Women, 30 – 50 years old
- Usually accompanies psychiatric diagnosis
- Chiropractic care
- Medical Treat with antidepressants
Post-Herpetic Neuralgia

- Persistent neuropathic pain
- > 2 months after acute eruption
- Reactivation of VZV
- Thoracic region & Trigeminal nerve common
Post-Traumatic Neuralgia

- Neuroma formation
- Occipital and parietal scalp
- Diagnosis based on history

Treatment
- As for Trigeminal Neuralgia
- Chiropractic
- Cold laser
- Trigger points
- Occasionally amenable to surgery
Temporomandibular Disorders

- Symptoms
  - Temporal headache
  - Earache
  - Facial pain
  - Trismus (inability to open mouth)
  - Joint noise
- 60% spontaneous
TMD Internal Derangements

- Tenderness to palpation
- Pain with movement
- Audible click
- Limited mouth opening
TMJ Degenerative Joint Disease

- Pain with joint movement
- Crepitus over joint
- Flattened condyle
- Osteophyte formation
Myofascial Pain

- Most common 60% - 70%
- Muscle pain dominates
- Tenderness to palpation of masticatory muscles
TMD Pain Treatment

- Chiropractic Care
- Trigger point (pterygoids)
- Biofeedback
- NSAIDs
- Benzodiazepines
- Muscle Relaxants
Cases

- Simulated Case
  - Pair up number 1 and 2
  - Case 1 doctor is #2 patient #1
  - Case 2 doctor is #1 patient #2

- Case Based Learning