Tension-Type Headache (TTH)

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TTH - most common primary headache disorder!

Past synonyms - tension headache, stress headache, muscle contraction headache, ordinary headache, psychomyogenic headache, psychogenic headache.

Pathophysiology

- not well understood and defies single or simple pathophysiologic explanation.

Likely cause is **abnormal neuronal sensitivity & pain facilitation**, not abnormal muscle contraction.

TTH is *not result* of **sustained contraction of pericranial muscles**\* with subsequent **ischemic pain** in response to emotion / stress. \*although many patients have muscle tenderness.

* muscle ischemia is not present during headache.
* EMG activity is increased in some muscles (independent of tenderness and pain).

"**Myofascial-supraspinal-vascular**" model – headache is viewed as sum of nociceptive input onto brain stem neurons from ***vascular structures***, ***myofascial*** and ***muscular sources***, and descending supraspinal modulation.

Contributions from both central and peripheral factors!

* + relative importance of these three factors varies among attacks and among patients.
  + neurotransmitter abnormalities (5-HT, norepinephrine, dopamine, enkephalins) in hypothalamus, brain stem, and spinal cord.
* CNS [5-HT]↓ may be responsible for **abnormal pain modulation** (decreased pain thresholds).
* in presence of **pain facilitation**, ***normal subthreshold stimuli*** may produce significant pain (even if myofascial nociceptor hypersensitivity is not present).

**State of cranial hyperalgesia** - reduced endogenous pain modulation + enhanced pain potentiation.

Etiology

- many causes!

* co-morbid migraine, mood disorders, sleep dysfunction, anxiety states contribute.

Epidemiology

* can begin at any age (most commonly – **2nd decade** - adolescence or young adulthood); uncommon before puberty.
* lifetime prevalence – 69% men, 88% women - one of most costly diseases!!!
* prevalence declines with increasing age (severity decreases in women but does not change in men).
* *socioeconomic factors* do not contribute to risk.
* *genetic factors* are not prominent (vs. migraine or other headache syndromes).
* 25% patients also have ***migraine***!

Clinical Features

- relatively ***featureless, mild headache***.

* no prodrome.
* often during or after ***stress***, ***anxiety***.
* may be associated with ***menstruation***, ***hunger***, ***eyestrain***, uncomfortable stressful ***position*** and/or bad ***posture***.
* **pain** (gradual onset):
  + nagging, tight, bandlike, ***constricting bilateral pressure*** (discomfort).
  + located in forehead, temples, or occipital area.
  + may radiate to neck and shoulders (patient may feel that ***posterior neck muscles are tight***\*). \*± EMG changes
  + severity fluctuates (typically worse late in day).
  + may persist for days.
  + often improved by physical activity or alcohol!
* normal general & neurologic examinations; some patients may have ***tender spots*** or ***taut bands*** in pericranial or cervical muscles (***trigger points***).
* no associated autonomic or GI symptoms (occasional anorexia).

Episodic TTH

**IHS criteria** - at least 10 headaches fulfilling following criteria:

1. each **lasting** 30 minutes ÷ 7 days (82% last < 24 hrs; median - 12 hours).
2. at least 2 of following characteristics:
   1. **bilateral**
   2. **nonpulsating** (pressing, tightening) quality
   3. mild ÷ moderate **intensity** (may inhibit but does not prohibit activities)
   4. **no aggravation** with routine physical activity (e.g. climbing stairs)
3. no *nausea*, *vomiting*, *photophobia*\*, *phonophobia*\*, *osmophobia*!!!

\*photophobia or phonophobia may be present but not both!

1. number of days with headache < 15 days / month.
2. *secondary headache* excluded.

* patients are no different from controls in terms of depression, stress, anxiety, emotional conflicts, sleeping problems, fatigue.
* ***benign recurrent condition*** that usually improves with time (some patients with analgesic overuse may progress to chronic TTH).

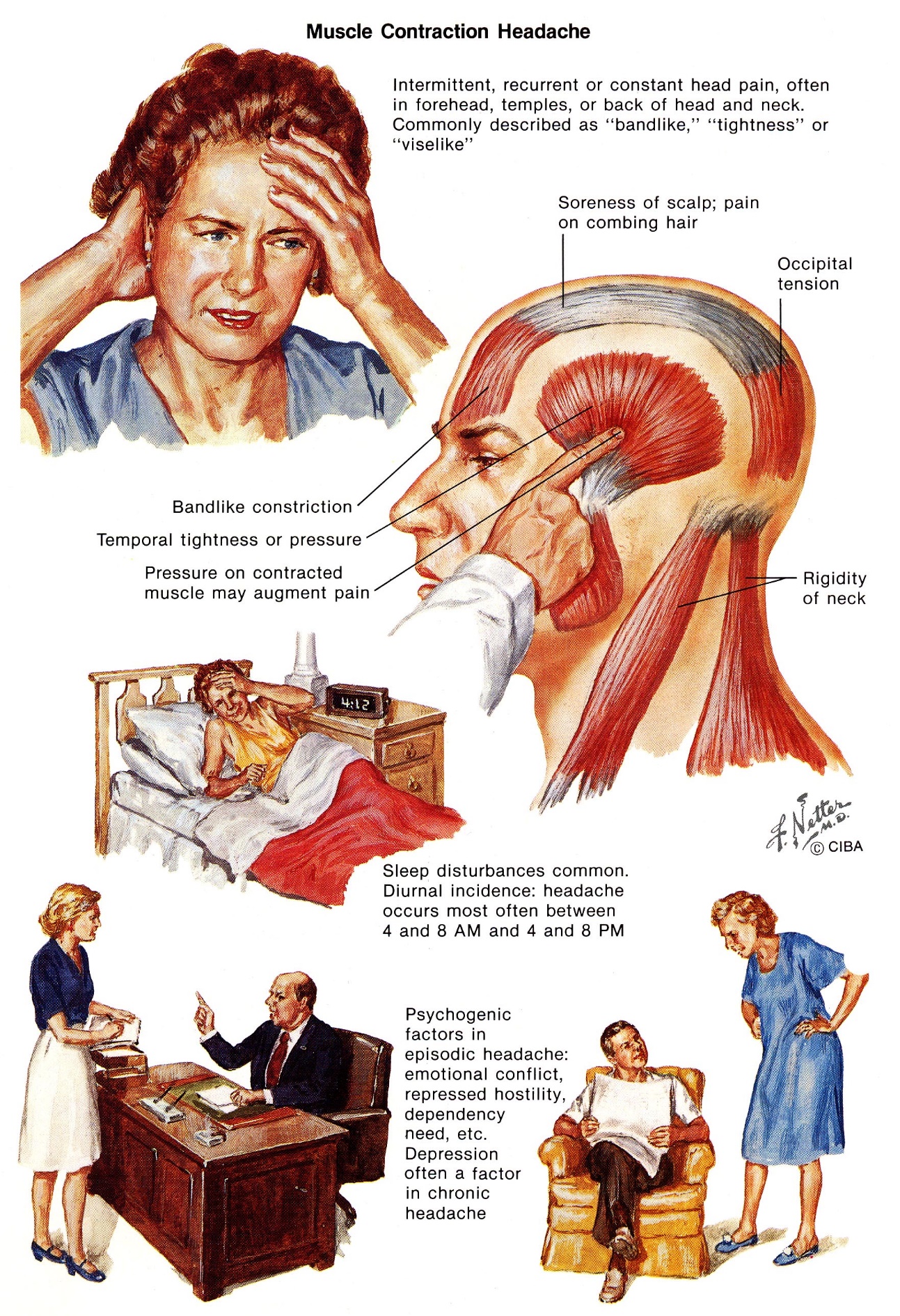
Chronic TTH

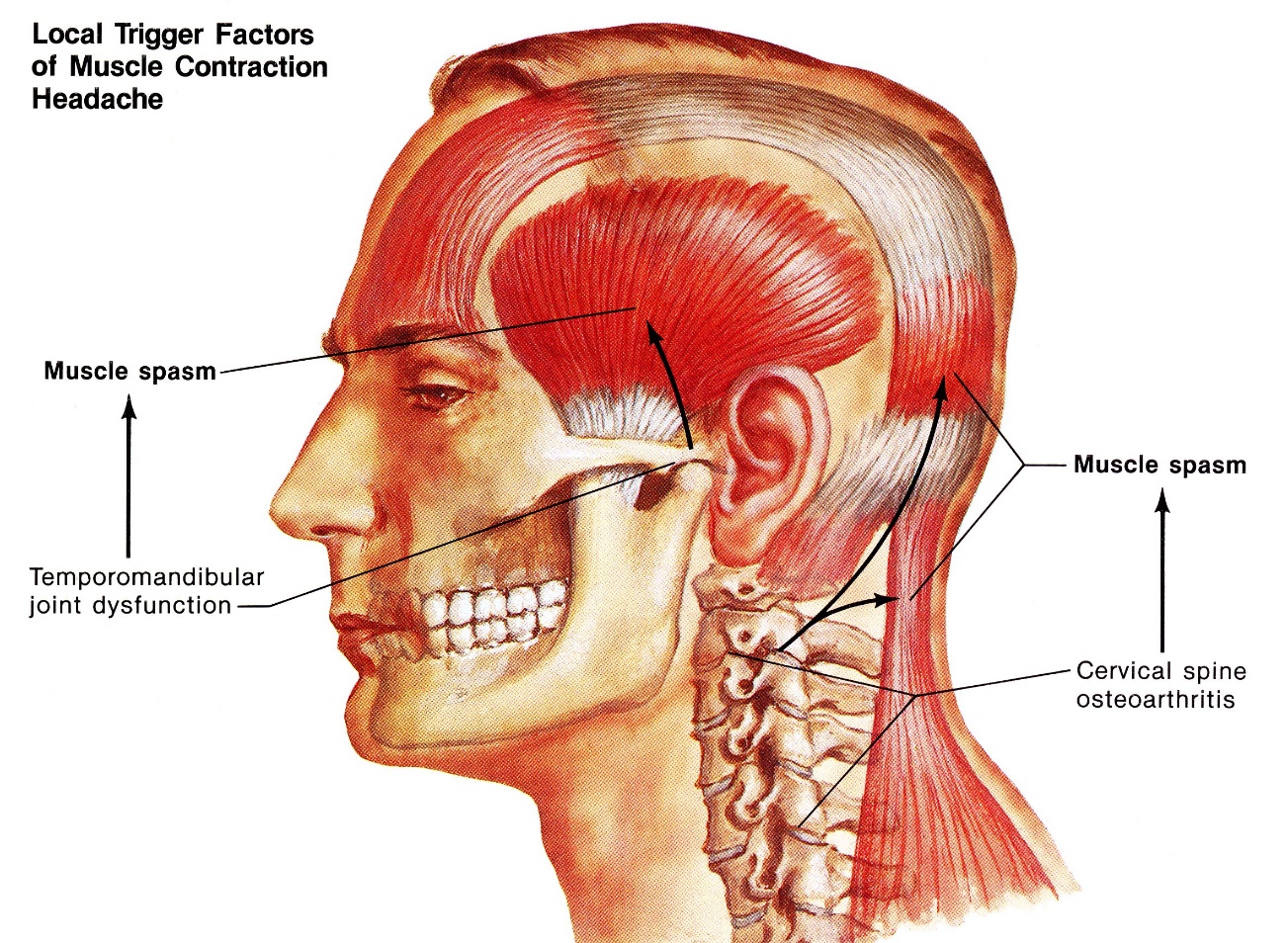
**IHS criteria**

1. at least 2 characteristics (as in episodic TTH).
2. no vomiting!
3. no more than one of following: nausea, photophobia, phonophobia.
4. *secondary headache* excluded.
5. number of days with headache > 15 days / month for > 6 months.

* patients are often ***depressed***!
* prognosis is controversial.

N.B. criteria have ***high specificity*** but ***low sensitivity*** - experienced clinicians often make presumptive diagnosis based on fewer criteria and proceed with treatment!





Evaluation

**Episodic TTH**: long stable history + normal neurological examinations → no further evaluation.

**Chronic TTH** → CT/MRI (even if general and neurological examinations are normal!) ± metabolic screen, CBC, electrolytes, kidney & thyroid function studies, psychiatry consultations.

Management

N.B. symptomatic medication overuse can convert **episodic TTH** to **chronic TTH**!

* patients usually self-medicate with ***over-the-counter analgesics*** (aspirin / acetaminophen / **NSAIDs** ± caffeine).
* if OTC are not effective:
  1. prescription ***NSAIDs*** (ibuprofen, ketoprofen, naproxen)
  2. ***combination analgesic*** (with isometheptene mucate, butalbital)
  3. ***physical therapy*** - neck massage and heat, stretching exercises, traction, manipulations, ultrasound therapy, TENS.
  4. ***psychophysiologic therapy*** - relaxation techniques, biofeedback techniques.
  5. ***minimally invasive techniques*** - trigger point injections, nerve blocks (greater or lesser occipital nerve, auriculotemporal nerve, supraorbital nerve), botulinum toxin\* injection in pericranial muscle.

\*probably ineffective by American Academy of Neurology report

N.B. overuse of analgesics that contain *narcotics* / *sedatives* / *caffeine* may cause dependence!



Preventive therapy

- indicated if frequent headaches *produce disability* or may lead to *symptomatic medication overuse*.

1. **tricyclic antidepressants** - first choice! (esp. amitriptyline)

Adequate trial period of at least 1-2 months must be allowed!

1. **β-blockers**
2. **anticonvulsants** (valproate)
3. **biofeedback** therapy.
4. **peripheral nerve blocks** [see p. S24 >>](HTTP://WWW.NEUROSURGERYRESIDENT.NET/S.%20SYMPTOMS,%20SIGNS,%20SYNDROMES\S20-29.%20PAIN,%20HEADACHE,%20OPIOIDS,%20SENSORY%20DISORDERS\S24.%20GENERAL%20-%20Headache.pdf#Peripheral_Nerve_Blocks)

Bibliography see [p. S24 >>](http://www.neurosurgeryresident.net/S.%20Symptoms,%20Signs,%20Syndromes\S20-29.%20Pain,%20Headache,%20Opioids,%20Sensory%20Disorders\S24.%20GENERAL%20-%20Headache.pdf)

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