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:
   a) **bilateral**
   b) **nonpulsating** (pressing, tightening) quality
   c) mild ÷ moderate **intensity** (may inhibit but does not prohibit activities)
   d) **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!
4) number of days with headache < 15 days / month.
5) *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

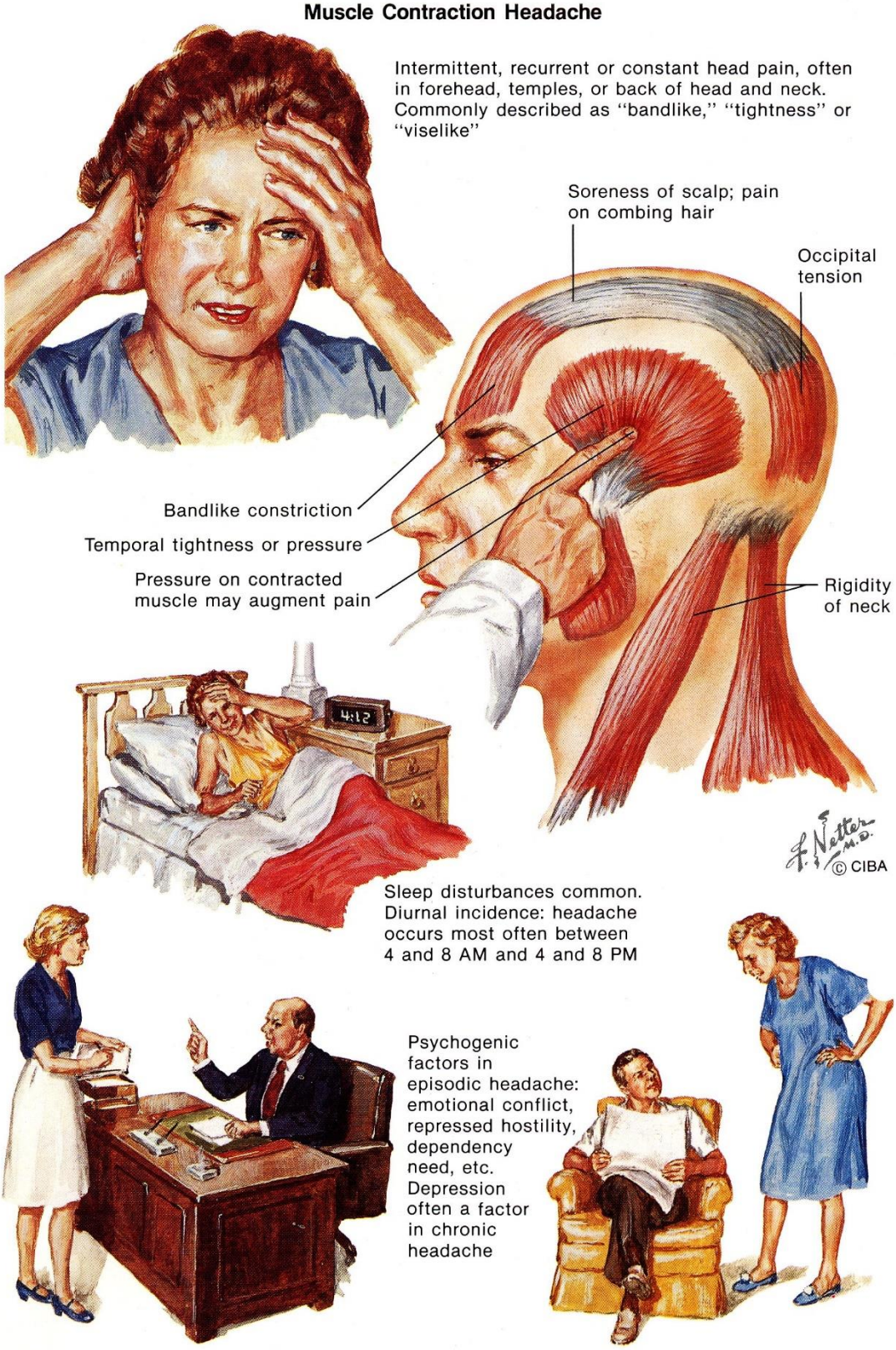
IHS criteria

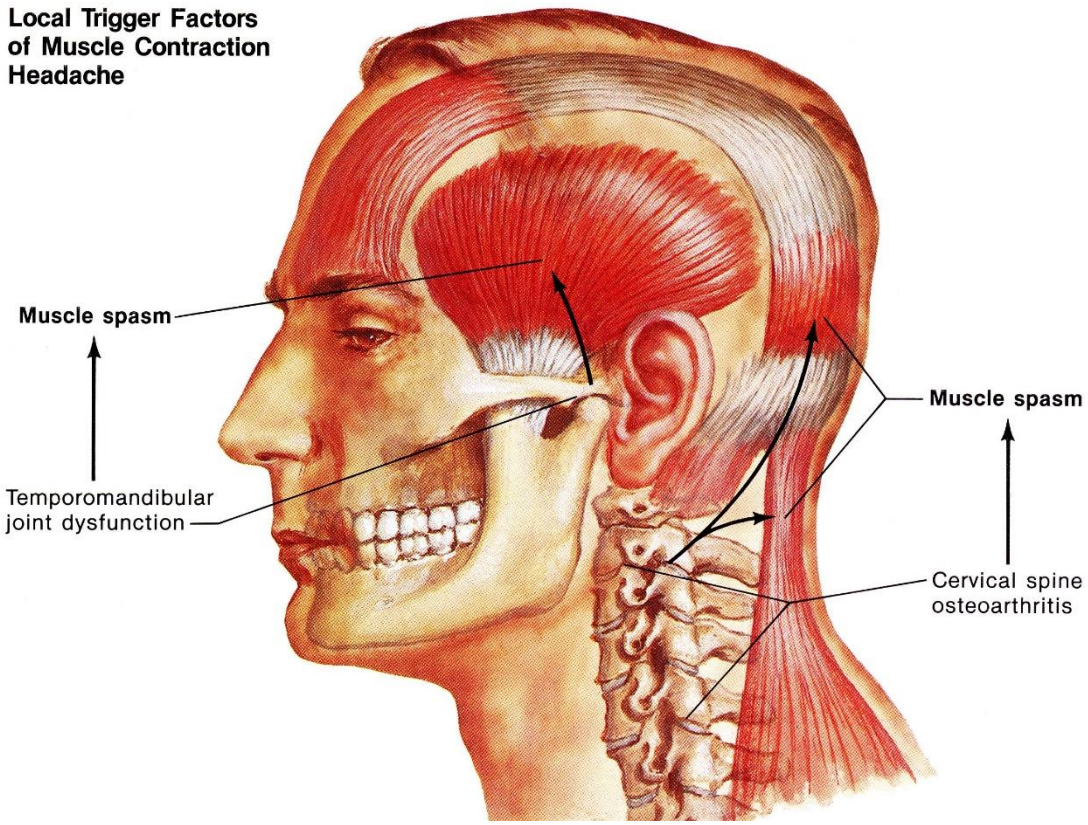
1) at least 2 characteristics (as in episodic TTH).
2) no vomiting!
3) no more than one of following: nausea, photophobia, phonophobia.
4) *secondary headache* excluded.
5) number of days with headache > 15 days / month for > 6 months.

- 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!

Muscle Contraction Headache





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).
- <u>if OTC are not effective</u>:
  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!
2) **β-blockers**
3) **anticonvulsants** (VALPROATE)
4) **biofeedback** therapy.

5) **peripheral nerve blocks** see p. S24 >>

BIBLIOGRAPHY see p. S24 >>