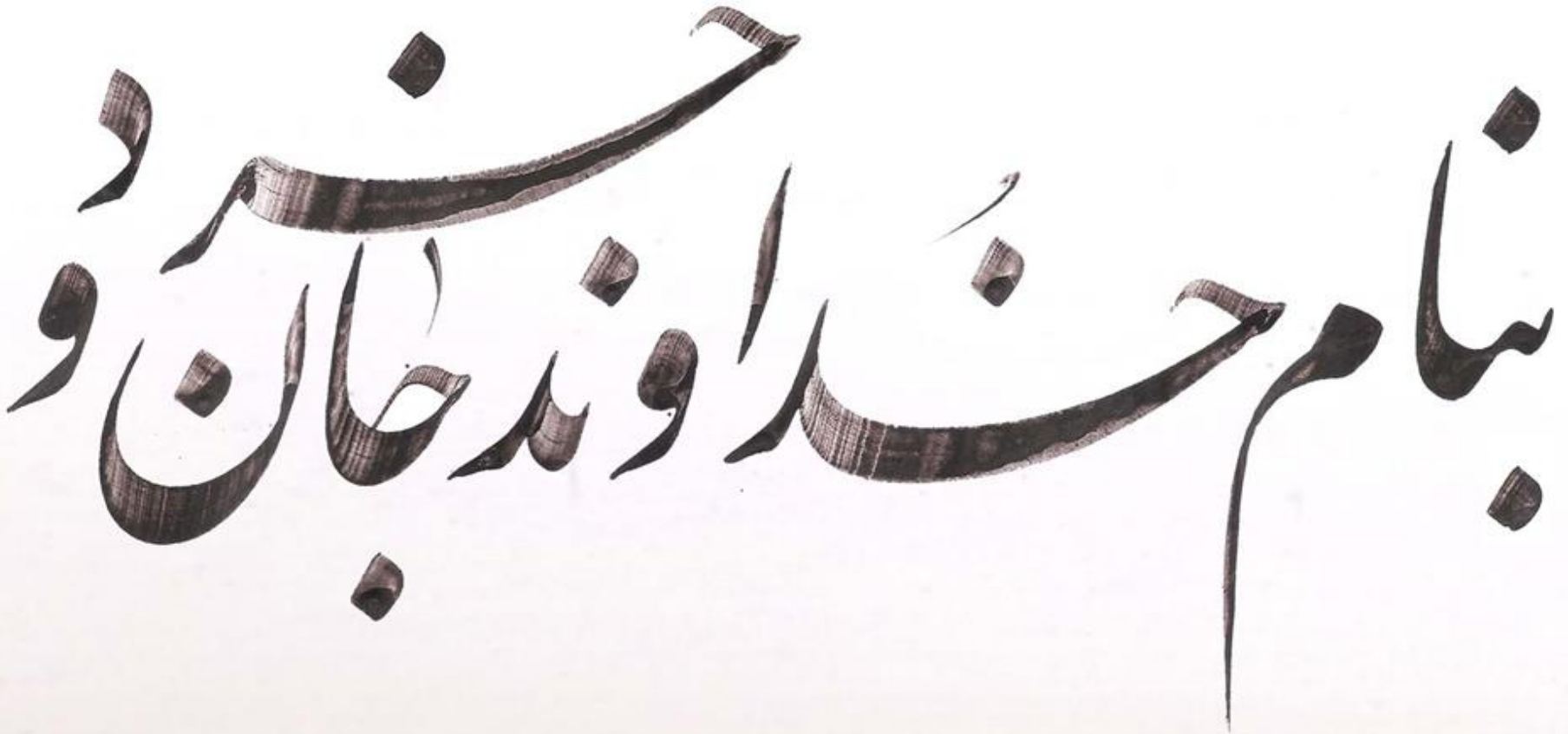

بنام خداوند جان و خرد

Tension Type Headache (TTH)

Dr. Somayyeh Baghizadeh
MD ,Neurologist, Master of Headache Disorders
Assisstant prof. of Alborz University of Medical Sciences
Oct 2023

Previously used terms

- Tension headache
- Muscle contraction headache
- Psychomyogenic headache
- Stress headache
- Ordinary headache
- Essential headache
- Idiopathic headache
- Psychogenic headache

Tension-Type Headache – The Normal and Most Prevalent Headache

Rigmor Højland Jensen, DrMed Sci

Epidemiology

- Incidence : GBD: 882.4 million new cases in 2017
- Prevalence: vary between studies, GBD: 2.33 billion people with TTH worldwide in 2017
- The global prevalence of CTTH is around 2-3 % in most population studies.

Risk factors

- A positive association between educational level and prevalence of ETTH, an inverse relationship was found for CTTH
- Young age
- Female sex
- Poor self-rated health
- Not being able to relax after work
- Sleeping few hours per night

Burden of the TTH

- The second most common cause of chronic disease and injury globally
- The most burdened age group: 15-49 years
- YLD: TTH: 7.1 million , Migraine: 47.2 million

Limitations of epidemiological studies

- Infrequent ETTH is common and may not be accurately recalled and remembered in epidemiological studies
- The incidence of frequent ETTH and CTTH may represent an exacerbation of a pre-existing disorder rather than new onset of a distinct condition
- TTH can coexist with migraine and diagnostic rules for coding migraine and TTH vary between studies.
- *Biomarkers to differentiate between phenotypic TTH and mild migraine are not available, but would be useful for this purpose.*

Comorbidities

- Anxiety
- Depression
- Sleep disturbances
- Other pain disorders: migraine, neck pain, low back pain
- One longitudinal study: 83% of people with migraine in the past year also had TTH
- Almost 90% of people with TTH: comorbid neck pain
- Around 80% of people with TTH: low back pain
- TTH frequency positively correlates with the frequency of comorbid neck pain and low back pain

ICHD-III criteria

- **2. Tension-type headache (TTH)**
- **2.1 Infrequent episodic tension-type headache**
  - 2.1.1 Infrequent episodic tension-type headache associated with pericranial tenderness
  - 2.1.2 Infrequent episodic tension-type headache not associated with pericranial tenderness
- **2.2 Frequent episodic tension-type headache**
  - 2.2.1 Frequent episodic tension-type headache associated with pericranial tenderness
  - 2.2.2 Frequent episodic tension-type headache not associated with pericranial tenderness
- **2.3 Chronic tension-type headache**
  - 2.3.1 Chronic tension-type headache associated with pericranial tenderness
  - 2.3.2 Chronic tension-type headache not associated with pericranial tenderness
- **2.4 Probable tension-type headache**
  - 2.4.1 Probable infrequent episodic tension-type headache
  - 2.4.2 Probable frequent episodic tension-type headache
  - 2.4.3 Probable chronic tension-type headache

2.1 Infrequent episodic tension-type headache

1. At least 10 episodes of headache occurring on <1 day/month on average (<12 days/year) and fulfilling criteria B-D
2. Lasting from 30 minutes to 7 days
3. At least two of the following four characteristics:
    1. bilateral location
    2. pressing or tightening (non-pulsating) quality
    3. mild or moderate intensity
    4. not aggravated by routine physical activity such as walking or climbing stairs
4. Both of the following:
    1. no nausea or vomiting
    2. no more than one of photophobia or phonophobia
5. Not better accounted for by another ICHD-3 diagnosis

2.2 Frequent episodic tension-type headache

1. At least 10 episodes of headache occurring on 1-14 days/month on average for >3 months (≥12 and <180 days/year) and fulfilling criteria B-D
2. Lasting from 30 minutes to 7 days
3. At least two of the following four characteristics:
    1. bilateral location
    2. pressing or tightening (non-pulsating) quality
    3. mild or moderate intensity
    4. not aggravated by routine physical activity such as walking or climbing stairs
4. Both of the following:
    1. no nausea or vomiting
    2. no more than one of photophobia or phonophobia
5. Not better accounted for by another ICHD-3 diagnosis

2.3 Chronic tension-type headache

1. Headache occurring on ≥15 days/month on average for >3 months (≥180 days/year), fulfilling criteria B-D
2. Lasting hours to days, or unremitting
3. At least two of the following four characteristics:
    1. bilateral location
    2. pressing or tightening (non-pulsating) quality
    3. mild or moderate intensity
    4. not aggravated by routine physical activity such as walking or climbing stairs
4. Both of the following:
    1. no more than one of photophobia, phonophobia or mild nausea
    2. neither moderate or severe nausea nor vomiting
5. Not better accounted for by another ICHD-3 diagnosis

2.3 Chronic tension-type headache

- A disorder evolving from frequent episodic tension-type headache
- Different from 4.10 *New daily persistent headache*
- 2.3 *Chronic tension-type headache* evolves over time from 2.2 *Frequent episodic tension-type headache*; when these criteria A-E are fulfilled by headache that, unambiguously, is daily and unremitting from less than 24 hours after its first onset, code as 4.10 *New daily persistent headache*. When the manner of onset is not remembered or is otherwise uncertain, code as 2.3 *Chronic tension-type headache*.

2.3 Chronic tension-type headache

- Both 2.3 *Chronic tension-type headache* and 1.3 *Chronic migraine* require headache on 15 or more days/month.
- For 2.3 *Chronic tension-type headache*, headache must, on at least 15 days, meet criteria B-D for 2.2 *Frequent episodic tension-type headache*;
- For *1.3 Chronic migraine* headache must, on at least eight days, meet criteria B-D for 1.1 *Migraine without aura*.
- A patient can therefore fulfil all criteria for both these diagnoses, for example by having headache on 25 days/month meeting migraine criteria on eight days and tension-type headache criteria on 17 days. In these cases, only the diagnosis 1.3 *Chronic migraine* should be given

2.3 Chronic tension-type headache

- In many uncertain cases there is overuse of medication.
- When this fulfils criterion B for any of the subtypes of 8.2 *Medication-overuse headache* and the criteria for 2.3 *Chronic tension-type headache* are also fulfilled, the rule is to code for both 2.3 *Chronic tension-type headache* and 8.2 *Medication-overuse headache*.
- After drug withdrawal, the diagnosis should be re-evaluated.
- Not uncommonly the criteria for 2.3 *Chronic tension-type headache* will no longer be fulfilled, with reversion to one or other episodic type.
- When the disorder remains chronic after withdrawal, the diagnosis of 8.2 *Medication-overuse headache* may be rescinded

2.4 Probable tension-type headache

- Tension-type-like headache *missing one of the features required to fulfil all criteria for a type or subtype of tension-type headache coded above*, and not fulfilling criteria for another headache disorder.
- Patients meeting one of the sets of criteria below may also meet the criteria for 1.5.1 *Probable migraine without aura*. In such cases, *the general rule of hierarchy applies*, putting 1. *Migraine* and its types and subtypes before 2. *Tension-type headache* and its types and subtypes.

ICHD-III alternative criteria for TTH

1. Episodes, or headache, fulfilling criterion A for [whichever of 2.1 *Infrequent episodic tension-type headache*, 2.2 *Frequent episodic tension-type headache* or 2.3 *Chronic tension-type headache*] and criteria B-D below
2. Episodes, or headache, fulfil criterion B for [whichever of 2.1 *Infrequent episodic tension-type headache*, 2.2 *Frequent episodic tension-type headache* or 2.3 *Chronic tension-type headache*]
3. Headache has at least three of the following four characteristics:
    1. bilateral location
    2. pressing/tightening (non-pulsating) quality
    3. mild or moderate intensity
    4. not aggravated by routine physical activity such as walking or climbing stairs
4. No nausea, vomiting, photophobia or phonophobia
5. Not better accounted for by another ICHD-3 diagnosis

Note: ***These criteria are very specific but have low sensitivity.***

Pericranial Tenderness

- Small rotating movements with the index and middle fingers, and firm pressure (preferably aided by use of a palpometer), provide local tenderness scores of 0-3

- Frontal, temporal, masseter, pterygoid, sternocleidomastoid, splenius

  and trapezius muscles

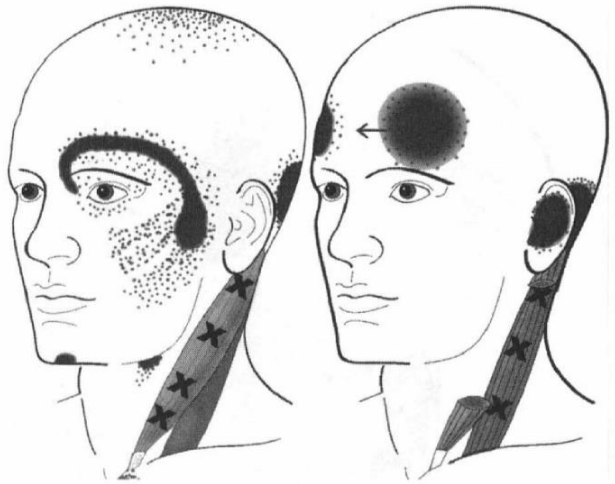


Figure 6.3 Referred Pain from Sternocleidomastoid Muscle Trigger Point

Modifed from Simons DG, Travell J, Simons L. *Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual*. Vol. 1. 2nd ed. Baltimore: Williams & Wilkins; 1999.

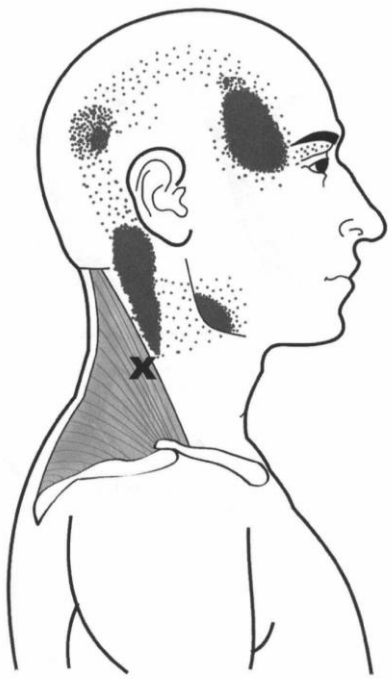


Figure 6.2 Referred Pain from Upper Trapezius Muscle Trigger Points

Modifed from Simons DG, Travell J, Simons L. *Travell and Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual*. Vol. 1. 2nd ed. Baltimore: Williams & Wilkins; 1999.

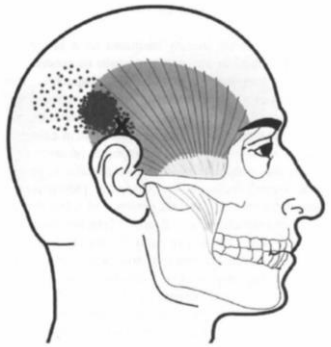


Figure 6.4 Referred Pain from Temporalis Muscle Trigger Point

Modifed from Simons DG, Travell J, Simons L. *Travell and Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual*. Vol. 1. 2nd ed. Baltimore: Williams & Wilkins; 1999.

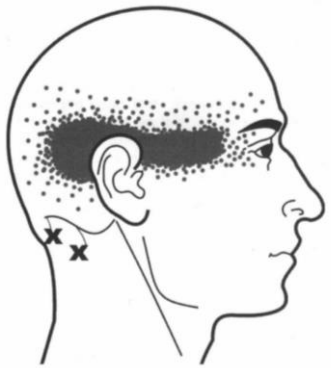


Figure 6.5 Referred Pain from Suboccipital Muscle Trigger Points

Modifed from Simons DG, Travell J, Simons L. *Travell and Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual*. Vol. 1. 2nd ed. Baltimore: Williams & Wilkins; 1999.

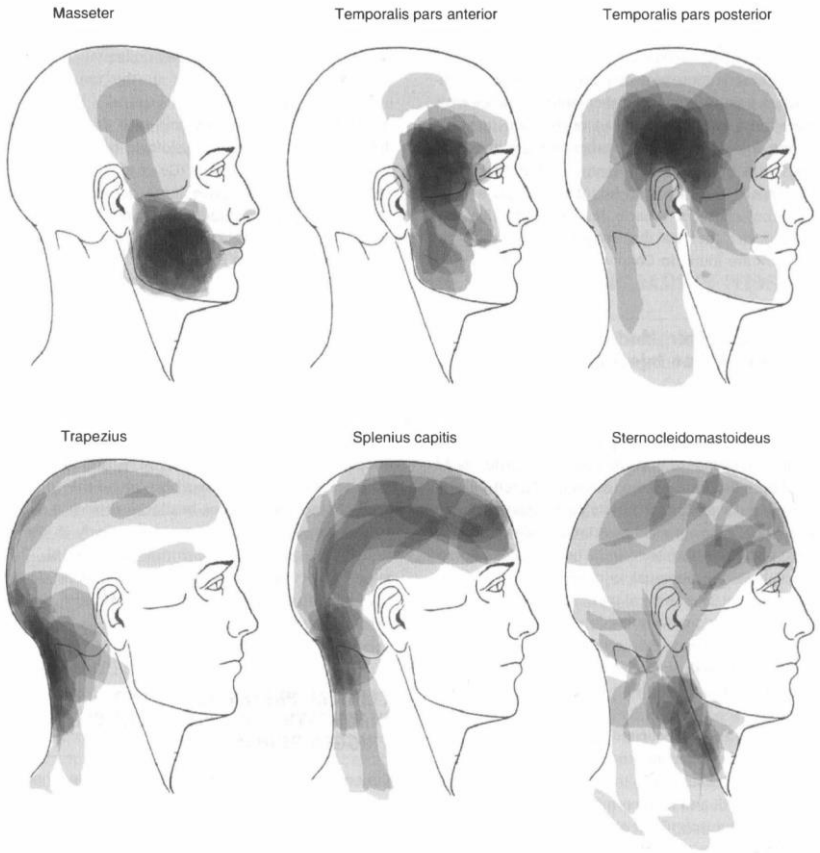
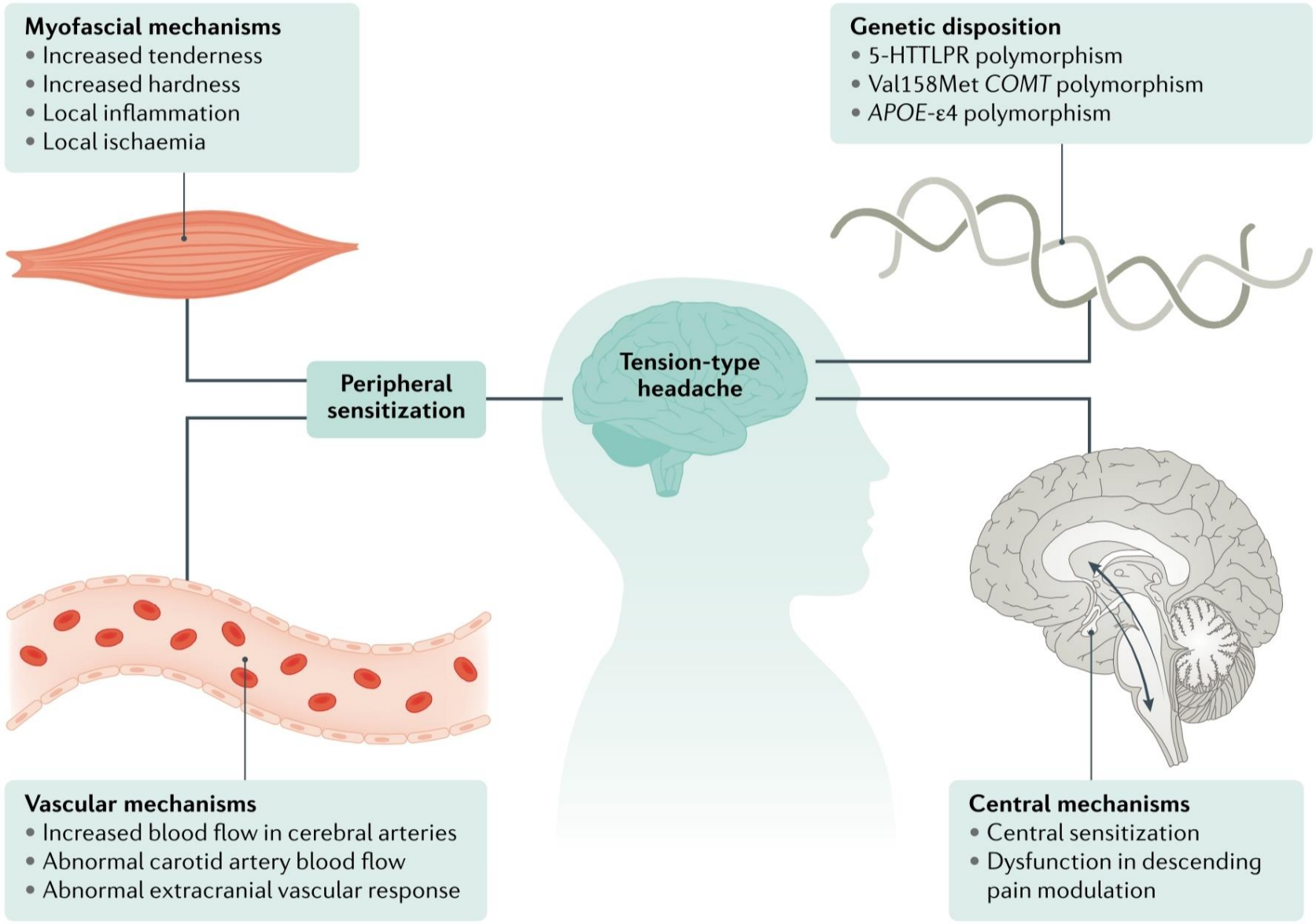


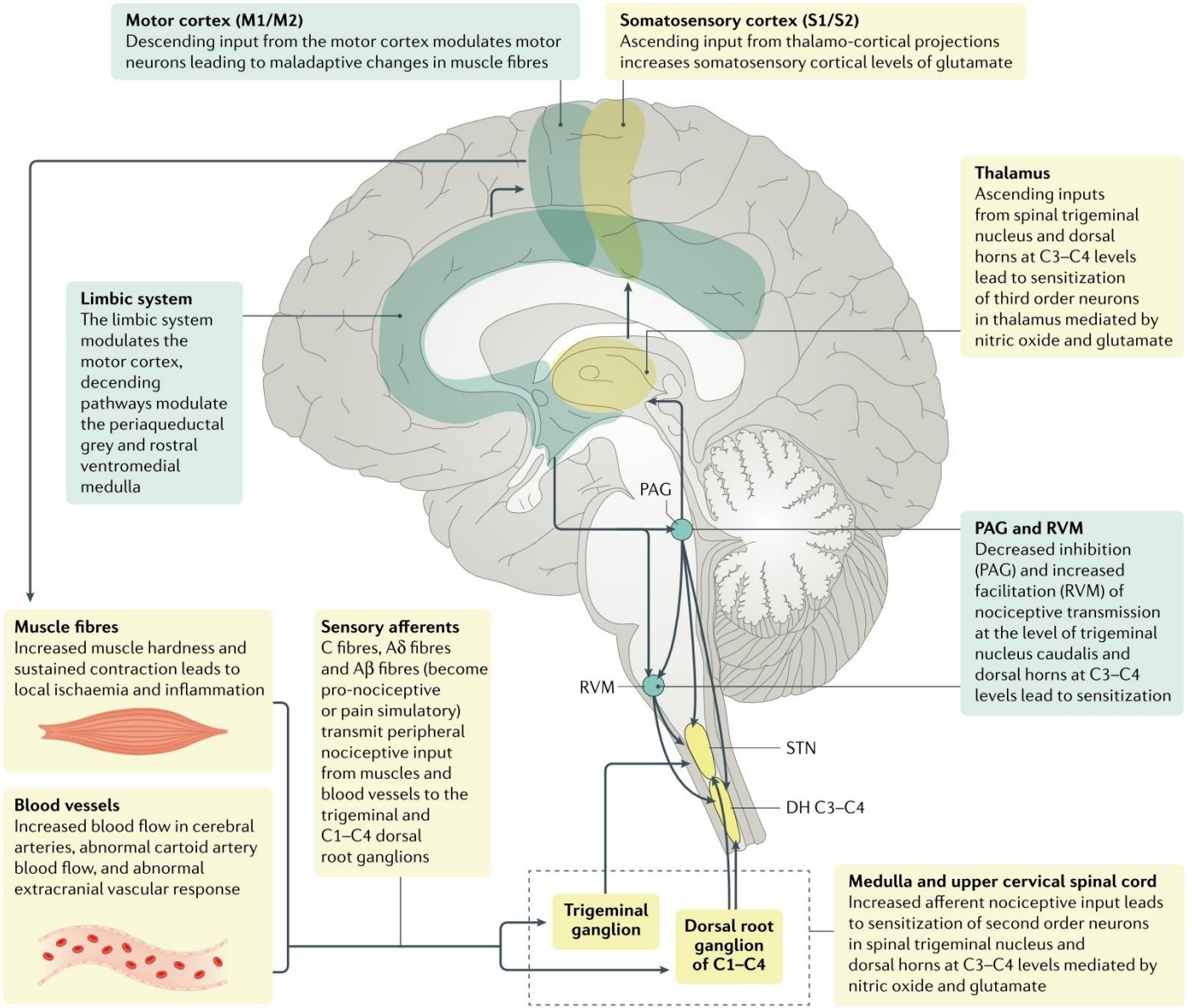
Figure 6.1 Referred Pain Elicited by the Injection of Hypertonic Saline into the Temporalis, Masseter, Upper Trapezius, Splenius Capitis, and Sternocleidomastoid Muscles

Adapted with permission from Schmidt-Hansen PT. (PhD thesis). A controlled study on muscle pain sensitivity in tension-type headache patients: experimentally induces pain in peri-cranial muscles.

Mechanisms/Pathophysiology

- Genetic
- Myofascial mechanisms including myofascial nociception
- Mechanisms of chronification including central sensitization and altered descending pain pathways





Diagnosis

Table 1.—The Eight Most Important Questions to a Headache Patient

Have you one or several different types of headache? Describe them one by one.
How long do your headaches last? (seconds, minutes, hours, days)
How frequent are your headaches?
What is the intensity of pain?
What do you do during a headache attack?
Where is the pain located?
Are there any associated symptoms?
Do you take any medication? If yes, how much and how frequent?

Box 2 | **Secondary headache disorders: red flags**

Intracranial space-occupying lesion
Red flags:
- progressively worsening headache
- headache brought on by sneezing, coughing or exercise

Subdural haematoma
Red flags:
- head trauma

Secondary headache
Red flags:
- headache associated with weight loss and/or change in memory or personality
- headache onset >50 years of age
- focal neurological symptoms
- weight loss
- impaired memory and/or altered consciousness or personality

Meningitis
Red flags:
- unexplained fever
- neck stiffness

Intracranial hypertension or hypotension
Red flag:
- headache aggravated by posture or manoeuvres that raise intracranial pressure

Subarachnoid haemorrhage
Red flag:
- neck stiffness

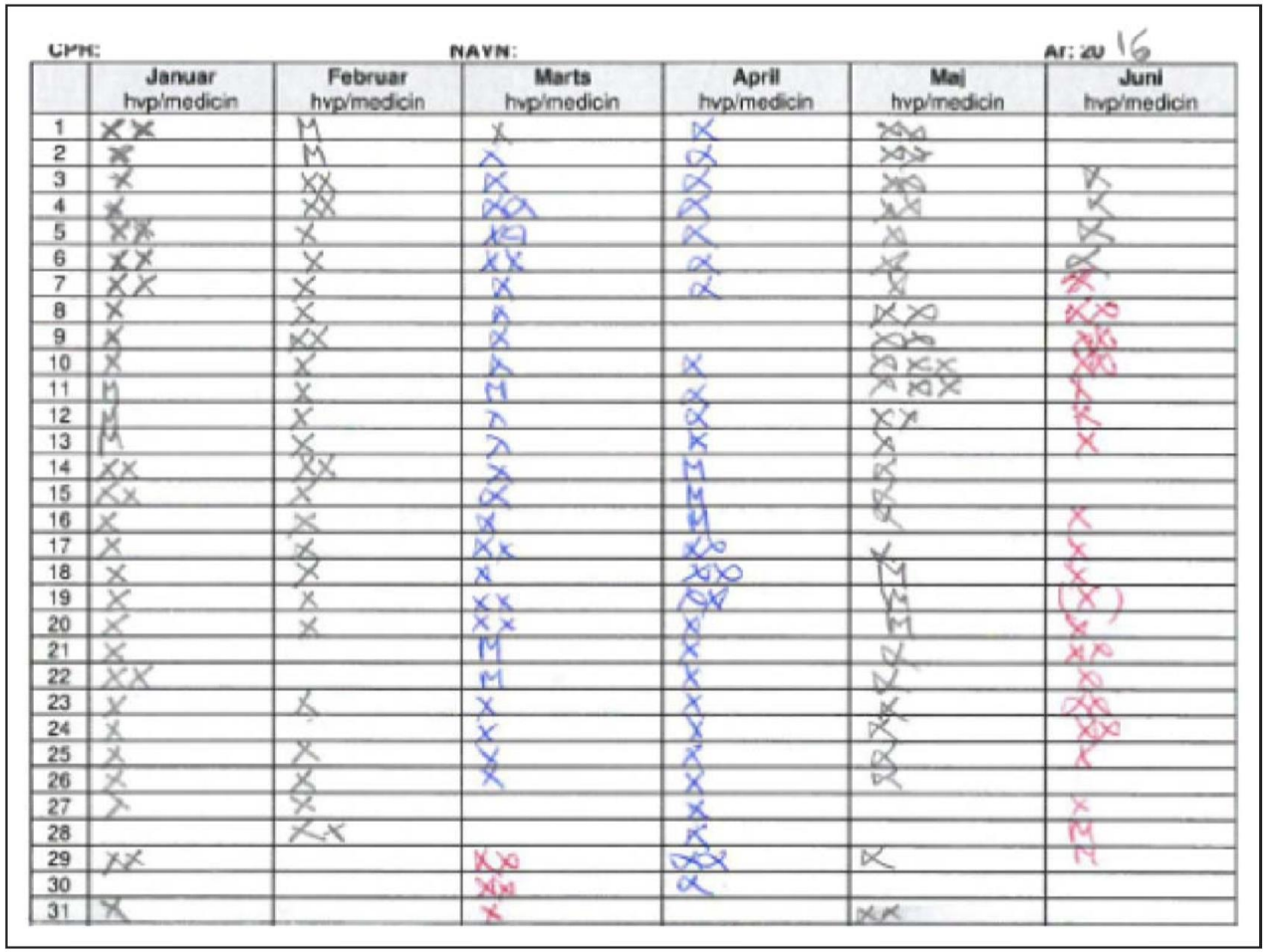


Fig. 1.—A typical diagnostic diary from a patient with chronic TTH with coexisting migraine. The Xs indicate TTH (X Mild, XX Moderate, and XXX Severe Intensity) and M indicates migraine attacks. [Color figure can be viewed at wileyonlinelibrary.com]

Diagnostic challenges

- Migraine
- Neck pain
- TMD

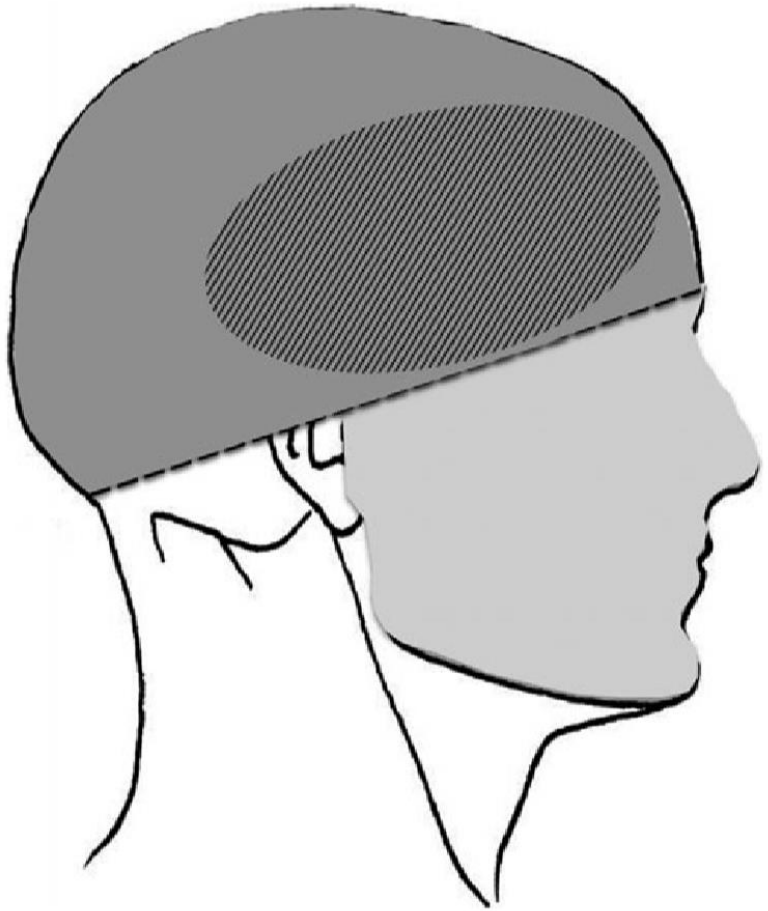
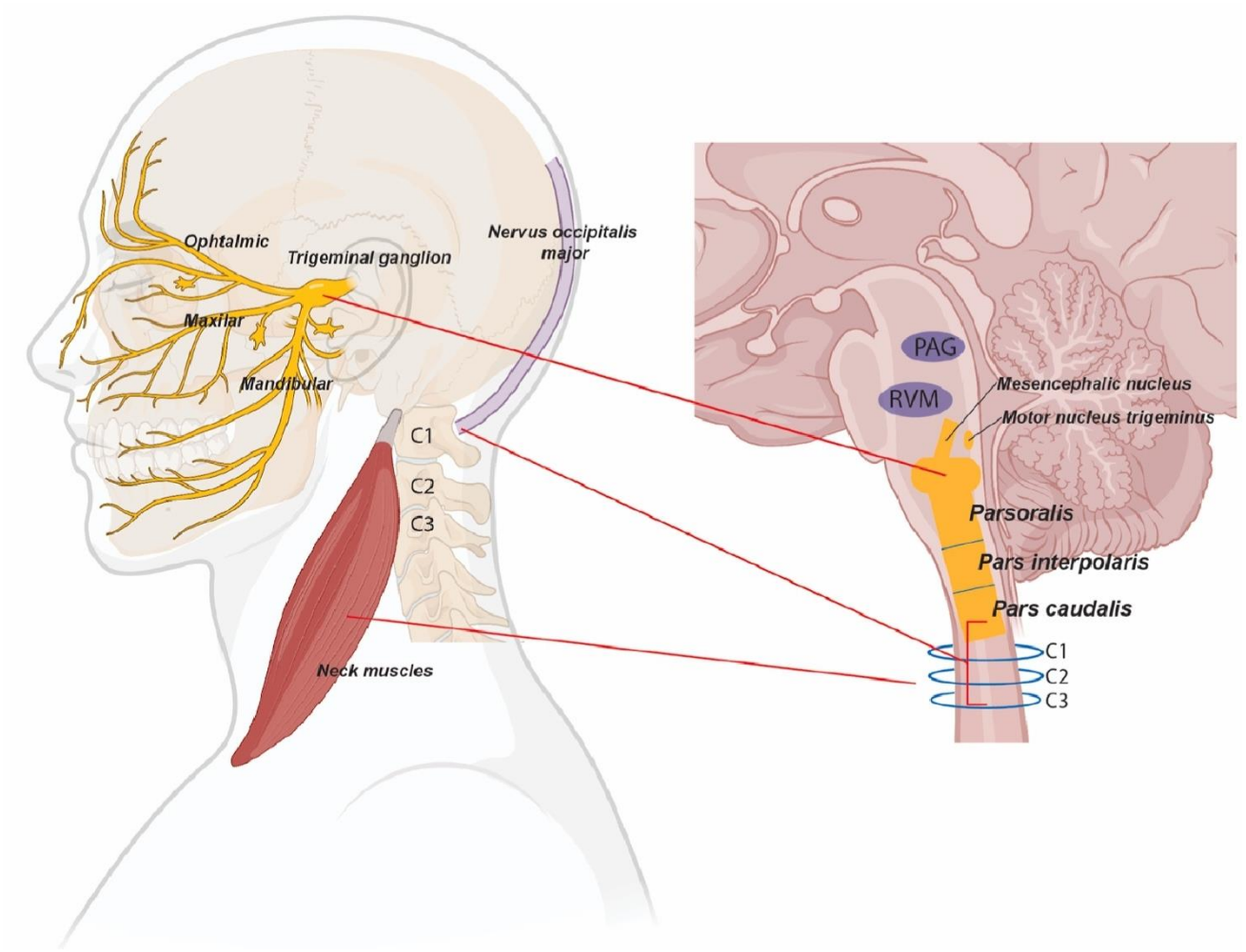
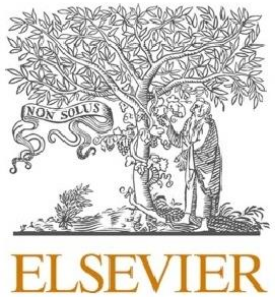


Fig. 1. Anatomical representation of headache and facial pain. Dashed line = orbitomeatal line. Darker grey = headache area. Lighter grey = facial pain area. Light upward diagonal black stripes background = temporalis muscle representation.



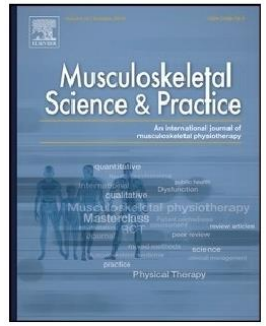
Musculoskeletal Science and Practice 66 (2023) 102780



Contents lists available at ScienceDirect

Musculoskeletal Science and Practice

journal homepage: www.elsevier.com/locate/msksp



The cervical spine in tension type headache

César Fernández-de-las-Peñas [a,*], Chad Cook [b], Joshua A. Cleland [c], Lidiane L. Florencio [a]

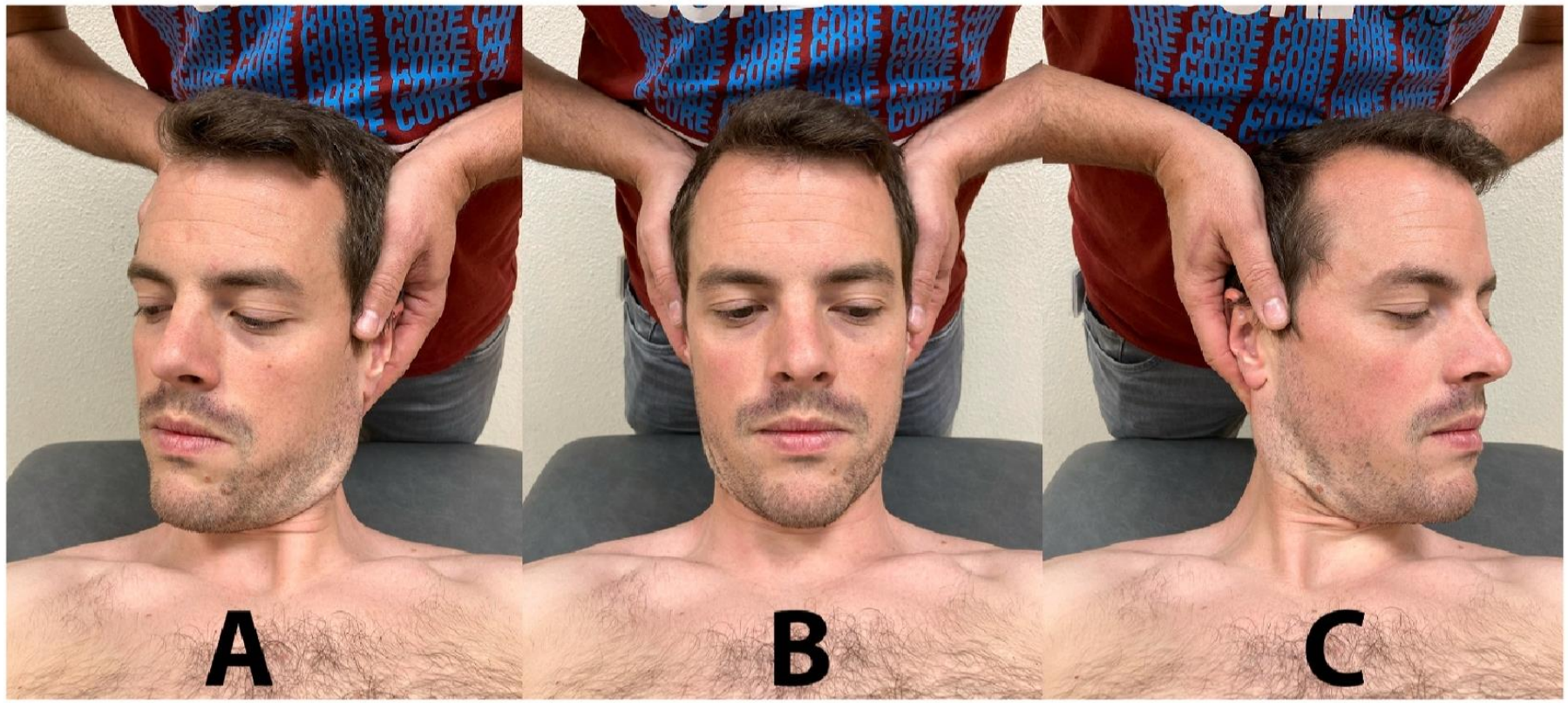


Fig. 1. Cervical Flexion Rotation Test. Initial position (B), rotation to the right (A), rotation to the left (C).

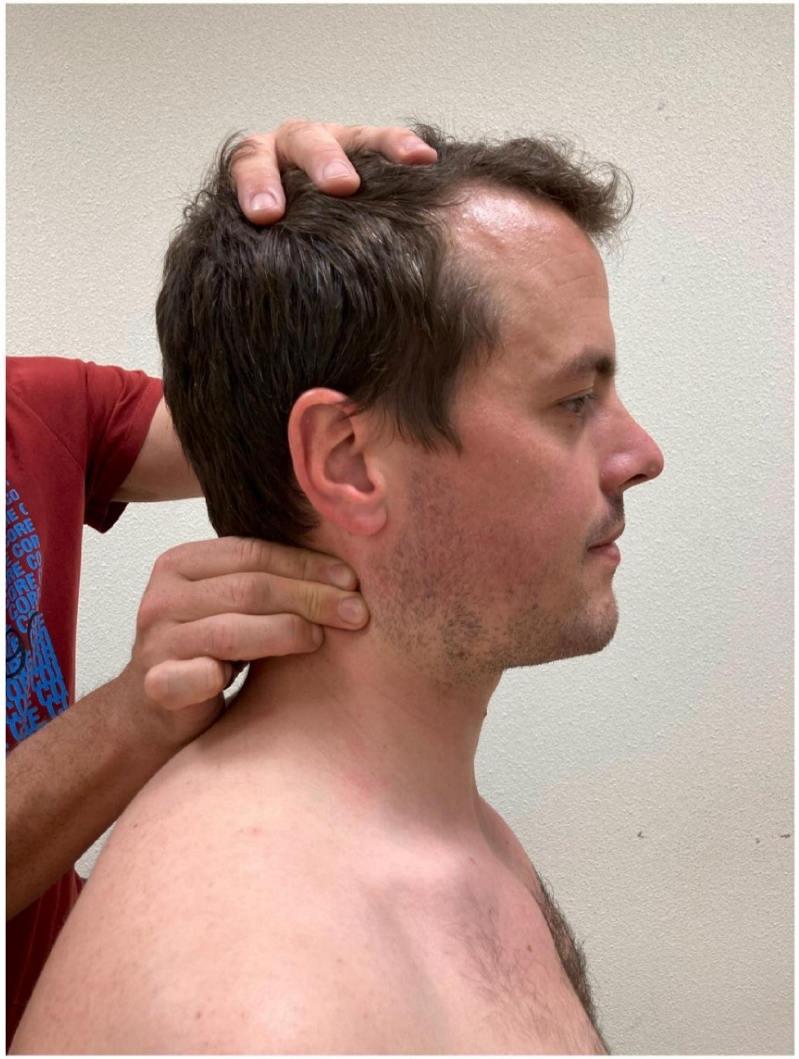


Fig. 2. C0-C2 axial rotation test.

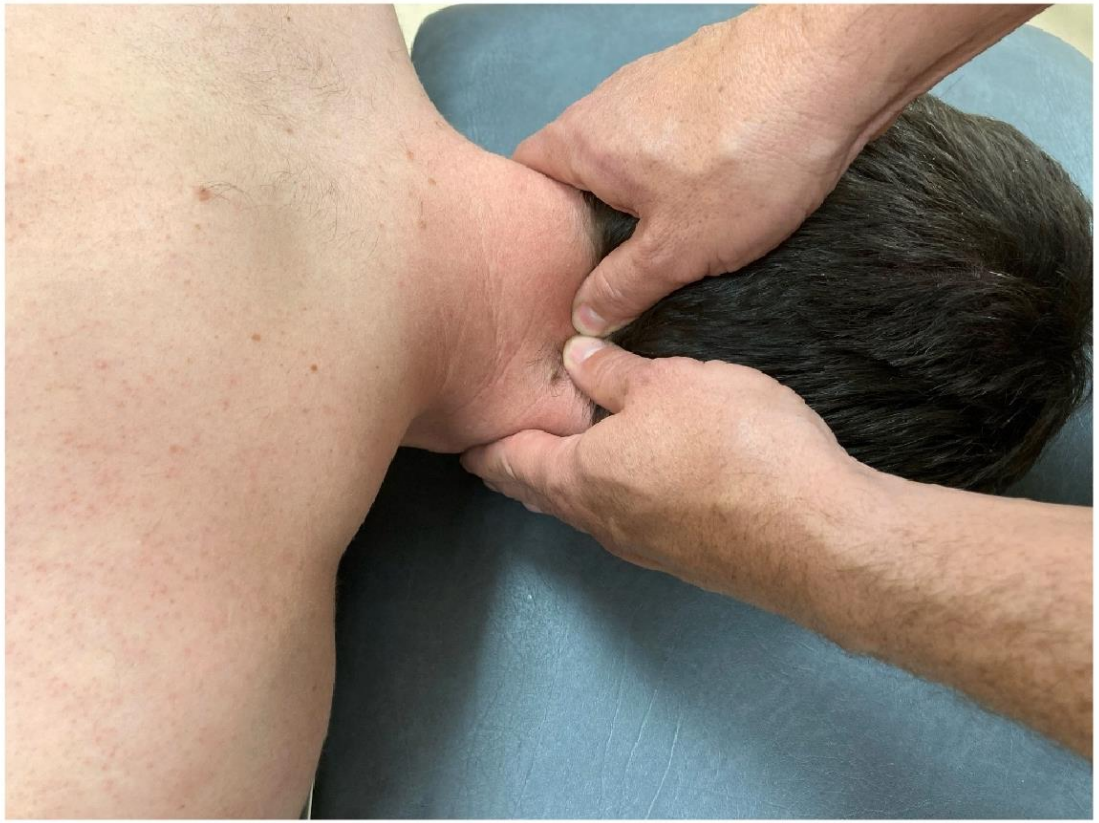


Fig. 3. Passive accessory inter-vertebral motion (posterior-anterior pressure) of the left C1-C2 joint.

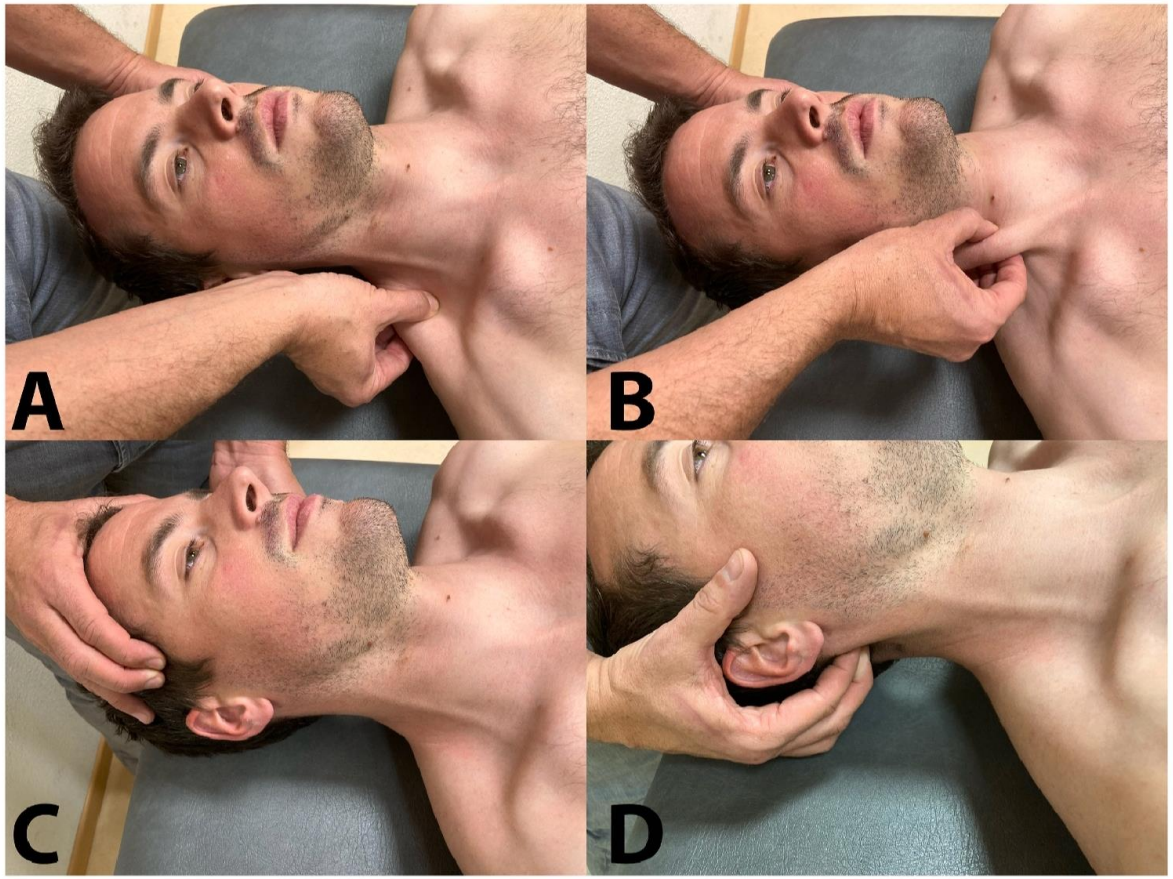


Fig. 4. Manual examination of trigger points (TrPs) in the upper trapezius (A), sternocleidomastoid (B), temporalis (C), and suboccipital (D) muscles.

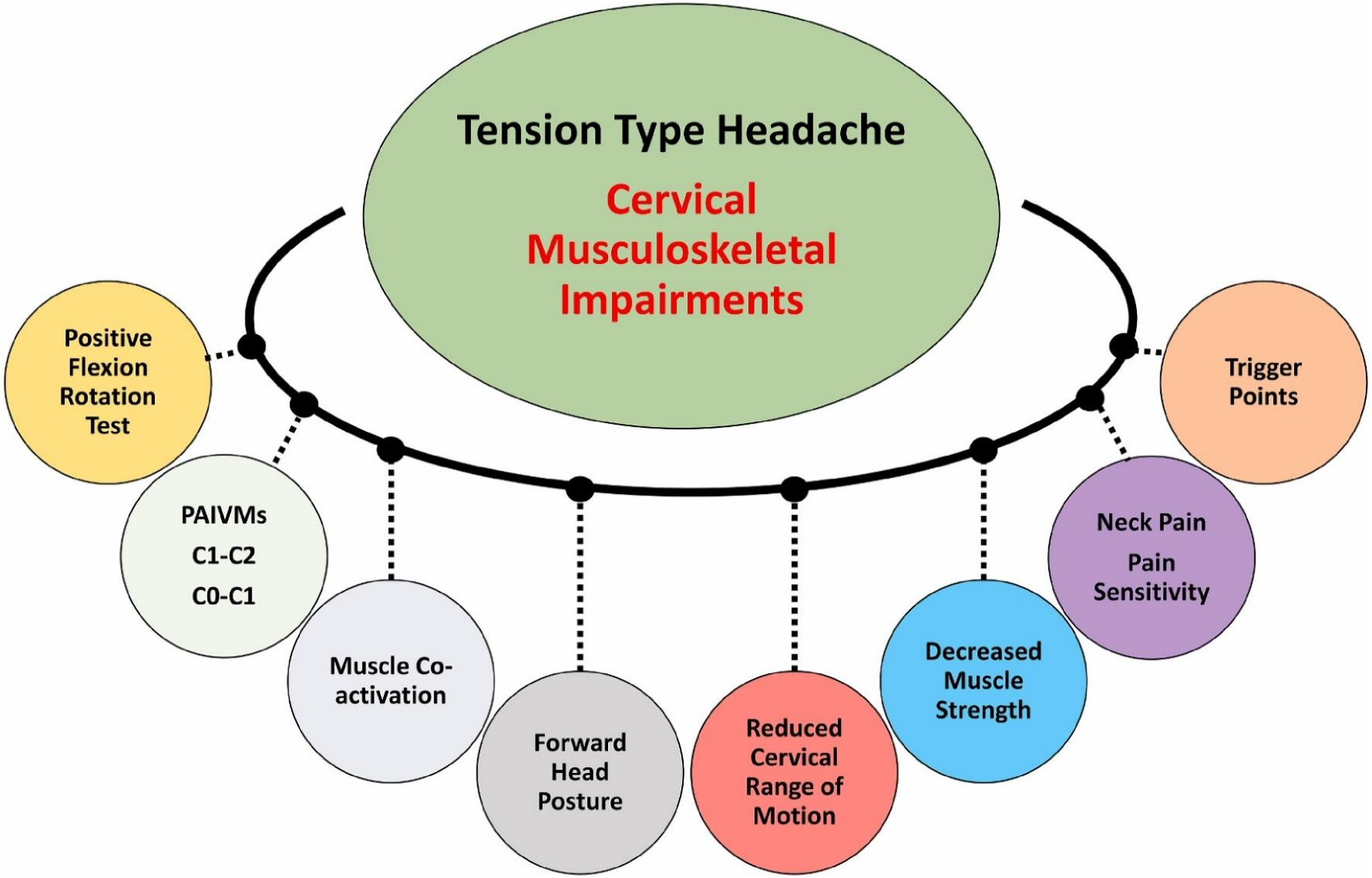


Fig. 5. Musculoskeletal impairments of the cervical spine observed in people with tension type headache.

Contents lists available at ScienceDirect

Manual Therapy

journal homepage: www.elsevier.com/math

Original article

International consensus on the most useful physical examination tests used by physiotherapists for patients with headache: A Delphi study

K. Luedtke [a, *], W. Boissonnault [b], N. Caspersen [c], R. Castien [d], A. Chaibi [e, f], D. Falla [g, h], C. Fernández-de-las-Peñas [i], T. Hall [j], J.R. Hirsvang [c], T. Horre [k], D. Hurley [l], G. Jull [m], L.S. Krøll [c], B.K. Madsen [c], J. Mallwitz [n], C. Miller [o], B. Schäfer [p], T. Schöttker-Königer [q], W. Starke [q], H. von Piekartz [r], D. Watson [s], P. Westerhuis [t], A. May [a]

Table 1
Qualitative responses for clinical indications for tests that received a summary rating of "don't know" or were supported by <51% of the 17 participants. The number in brackets indicates the number of agreed responses on a statement.

Physical examination test	Might be useful in these specific clinical situations:
Temporo-mandibular screening	- orofacial pain or pain with mandibular movement (10) - cervical component suspected (3) - all other tests negative (2) - tension suspected as main pain mechanism (2) - insufficient improvement with the treatment of the cervical spine (2) - to exclude CMD (1)
Left-right-recognition	- CGH (1) - central sensitisation (1) - face or neck pain unilateral >3 months (1)
Facial emotional recognition	- orofacial pain (2) - TTH (1)
Other Neurodynamic Tests e.g. upper cervical flexion with bilateral shoulder abduction	- to screen for neural tissue mechanosensitivity (3) - cervical spine flexion or retraction is restricted and painful (2) - CGH (2) - trigeminal neuralgia (1) - clinical pattern indicates neurodynamic component (1) - neuropathic pain pattern (1)
Pressure pain thresholds	- exclusively for research purposes (6) - to evaluate central sensitisation (6) - in chronic TTH as a re-assessment tool (2) - fibromyalgia suspected (1)
Cervical slump test	- CGH in cases where a neurodynamic component was suspected (9) - advanced test, if less aggressive test did not show conclusive response (2) - as a safety tests prior to cervical manipulation (1)
Cranial nerve palpation	- only if neuropathic component/cervical neural sensitisation suspected (5) - migraine (2) - no other findings (2) - to determine the cranial nerve sensitivity (2)
Total tenderness score	- suspected TMJ involvement (3) - TTH (3) - re-assessment (3) - all patients (1) - suspected central sensitisation (1) - to indicate musculoskeletal involvement (1) - myofascial pain syndrome (1) - if headaches symptoms were consistent with the referral pattern of the affected muscles (1) - to further investigate the relationship between arthrogenic and myogenic structure (1)
McKenzie tests	- no evidence (3) - maybe for CGH (2) - only if repeated movements change headache intensity/quality (2) - other tests more informative (1) - disc as a source of pain (1) - posture as a contributing factor (1) - to further identify segmental level (1)

TTH = tension-type headache; CGH = cervicogenic headache; TMJ = temporomandibular joint; CMD = craniomandibular dysfunction.

Journal of Oral Rehabilitation

Journal of Oral Rehabilitation 2016

Review

Headaches and myofascial temporomandibular disorders: overlapping entities, separate managements?

P. C. R. CONTI*†, Y. M. COSTA†‡, D. A. GONÇALVES§ & P. SVENSSON¶*††† *Depart-

Table 1. Clinical characteristics of myofascial temporomandibular disorders (TMD) and tension-type headache (TTH)

Clinical Characteristics	Myofascial TMD	TTH
Demographics		
Age peak prevalence	30–40	30–39
Female-to-male ratio	3·3:1	1·6–3:1
Prevalence	45·3%	32%
Incidence	3·5%	1·42%
Clinical Presentation		
Location	Masseter and temporalis muscle region	Frontotemporal and bilateral (90%)
Quality	Not accurately established	Pressing/tightening (78%)
Frequency	Not accurately established	≥1 and <15 days month^{-1} (38%) and ≥15 days month^{-1} (3%)
Intensity	Mild–moderate	Mild–moderate
Pain upon palpation	Yes (Mandatory)	Yes (Non-essential)

References #53 to #57 were used to elaborate the table.

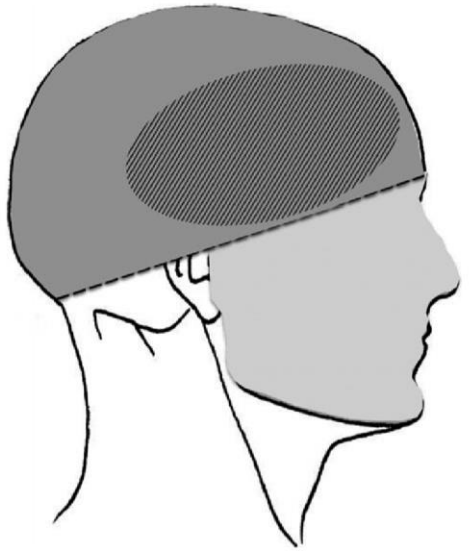


Fig. 1. Anatomical representation of headache and facial pain. Dashed line = orbitomeatal line. Darker grey = headache area. Lighter grey = facial pain area. Light upward diagonal black stripes background = temporalis muscle representation.

Table 2. Comparison between the International Classification for Headache Disorders, 3rd edition (ICHD-3) and the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) criteria for headache attributed to temporomandibular disorders (TMD)

Headache Characterisation	ICHD-3	DC/TMD	Item Correspondence
Clinical Presentation			
Location	ns*†	'Headache of any type in the temple area'	No
Quality	ns	ns	Yes
Duration	ns	ns	Yes
Frequency	ns	ns	Yes
Intensity	ns	ns	Yes
Causality Criteria			
Temporal relation	'Headache has developed in temporal relation to the onset of the temporomandibular disorder' or 'headache has significantly worsened in parallel with progression of the temporomandibular disorder' or 'headache has significantly improved or resolved in parallel with improvement in or resolution of the temporomandibular disorder'	ns	No
Clinical evidence	'The headache is produced or exacerbated by active jaw movements, passive movements through the range of motion of the jaw and/or provocative manoeuvres applied to temporomandibular structures such as pressure on the TMJ and surrounding muscles of mastication'	'Headache modified with jaw movement, function or parafunction' and 'confirmation of headache location in the area of temporalis muscle(s)' and 'report of familiar headache in the temple are with at least one of the following provocation tests: palpation of temporalis muscle or maximum unassisted or assisted mouth opening, right of left lateral or protrusive movement(s)'	Yes only if the headache is located in the temple area and when the modification is towards aggravation.
Causative disorder	'Clinical and/or imaging evidence of a pathological process affecting the temporomandibular joint (TMJ), muscles of mastication and/or or associated structures'	A valid diagnosis of painful TMD must be established	Yes

*ns = not specified. †The criterion 4 of the ICHD-3 requires an ipsilateral TMD in cases of unilateral headaches.

Table 1 | **A selection of acute medications for TTH tested in randomized placebo-controlled trials**

Drug by type of study	Route	NNT	NNH	Quality of evidence	Ref.
Meta-analysis					
Aspirin	PO	6 (4.2–12)[a]	No difference	Low	180
Paracetamol/acetaminophen	PO	22 (15–40)[a]	No difference	High	179
Ibuprofen	PO	14 (8.4–47)[a]	NA	Moderate	183
Ketoprofen	PO	9.0 (4.8–72)[a]	15 (8.7–15)	Low	184
Aspirin + paracetamol + caffeine	PO	6 (4.8–6.5)[b]	41	High	189
Single studies					
Diclofenac sodium	PO	7 (4.5–14.7)[a]	50	Low	186
Diclofenac sodium	PO	10 (5.7–33.9)[a]	122	Low	186
Naproxen	PO	18[c]	53	Low	185
Metoclopramide + diphenhydramine	IV	6 (3–66)[d]	NA	Low	264
Pethidine	IM	7 (4.5–14.7)[a]	NA	Low	265
Chlorpromazine	IV	2 (1.4–3.5)[e]	NA	Low	265
Metoclopramide	IV	2 (1.3–2.6)[e]	No difference	Low	265

Quality of evidence is based on the results of the meta-analyses, otherwise calculated as follows: one positive RCT = low, two positive RCTs = moderate, three or more positive RCTs = high-quality evidence). IM, intramuscular; IV, intravenous; NA, not applicable; NNT, number of patients needed to treat for a patient to have a beneficial outcome; NNH, number of patients needed to treat for a patient to have an adverse event; PO, per os; RCT, randomized controlled trial; TTH, tension-type headache. [a]Pain free at 2 h post-dose was the beneficial outcome. [b]NNT is the number of headache attacks that are needed to treat for a headache attack to have a complete pain-free outcome. [c]When NNTs or NNHs extend from a negative absolute risk reduction the 95% confidence intervals are not presented. [d]NNT is the number of patients who would need to be treated with the more efficacious medication (metoclopramide + diphenhydramine) instead of the ketorolac for a single patient to achieve headache freedom in the emergency department without requiring rescue medication and maintain headache freedom for 24 h. [e]Prevention of the use of a rescue medication 2 h post-dose was the beneficial outcome.

Table 2 | **A selection of prophylactic treatments for TTH tested in randomized placebo- or sham-controlled trials**

Treatment by study	Route	NNT	NNH	Overall quality of evidence	Refs
EFNS Task Force study					
Amitriptyline	PO	NA (30% reduction)[a]	3 (1.6–3.9)	High	181
Amitriptyline	PO	12[b]	2 (1.6–2.6)	High	139,181
Single studies					
Mirtazapine	PO	NA (34% reduction)[a]	4 (2.4–13.0)	Moderate	201,266
SMT	NA	18[b]	No difference	Low	218
Amitriptyline + SMT	NA	3 (1.9–6.0)[c]	2 (1.6–2.6)	Low	218
Venlafaxine	PO	4 (2.0–14.2)[d]	6[b]	Low	203
Meta-analysis					
Acupuncture	NA	11 (5.8–41.5)[d]	20[b]	High	238

Quality of evidence is based on the results of the meta-analyses, otherwise calculated as follows: one positive RCT = low, two positive RCTs = moderate, three or more positive RCTs = high quality of evidence. EFNS, European Federation of Neurological Societies; NA, not applicable; NNH, number of patients needed to treat for a patient to have an adverse event; NNT, number of patients needed to treat for a patient to have a beneficial outcome; PO, per os; RCT, randomized controlled trial; SMT: stress management treatment, or cognitive behavioural treatment; TTH, tension-type headache. [a]NNT cannot be calculated, reduction of the area under the curve vs placebo was the beneficial outcome. [b]When NNTs or NNHs extend from a negative absolute risk reduction the 95% confidence intervals are not presented. [c]>50% reduction of the headache index after treatment was the beneficial outcome. [d]>50% reduction in monthly headache days after treatment was the beneficial outcome.

Box 3 | **Management of TTH in specific populations**

Children and adolescents

There is some evidence only for acetaminophen[267] in the acute treatment of tension-type headache (TTH) and amitriptyline[268,269] for prevention, whereas non-pharmacological and multidisciplinary interventions[216,270–272] have stronger evidence and should be preferable or used in combination with amitriptyline when needed.

Elderly individuals

First-choice treatment is non-pharmacological intervention (such as biofeedback or relaxation techniques) whenever accessible and accepted by patients. Acetaminophen is the drug of first choice for acute treatment (NSAIDs should be avoided) and amitriptyline for prevention of TTH, followed by venlafaxine and mirtazapine. Close monitoring is required owing to the risk of adverse effects[181,199,273]. Notably, TTH may be a risk factor for dementia[274].

Pregnancy and lactation

Pharmacological treatment should be offered and not be postponed when needed[275]. Acetaminophen is the first-choice drug for symptomatic treatment but combinations with caffeine or NSAIDs should be avoided[275]. Amitriptyline is preferred for the prevention of TTH, followed by venlafaxine and mirtazapine (same FDA classification as for pregnancy — C class)[275].


لا ای صبح آزادی به یاد آور در آن شادی
کزین شب های ناباور، منت آواز می دادم
هوشنگ ابتهاج