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REVIEW

Tension type headaches: a review

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Abstract

Headache disorders are a common condition affecting present-day societies worldwide. Headaches are classified by the International Headache Society as being either primary or secondary. Primary headaches are those without an underlying, physical cause, e.g. migraine, cluster and other benign-type headaches. Secondary headaches, as the term suggests, are as a result of an underlying cause, e.g. a tumour, meningitis and a haemorrhage.

Tension-type headaches, together with migraines, are the most common primary headaches, affecting 80% of the general population.[1] Various terms has been used to describe tension-type headaches, but these have since been discarded, e.g. "tension headache", owing to ambiguity as to whether or not the cause of the tension was psychological or muscular. Other terms no longer in use include "psychogenic headaches" and "stress headaches".

Keywords: tension headaches, migraines, cluster, tumours, meningitis, haemorrhage

Epidemiology

A wide variation in the prevalence of tension-type headaches has been documented in different studies owing to varying methodologies. Over a period of 10 years, 2 138 people with primary headaches (24% of all conditions) were seen in the Department of Neurology, Dr George Mukhari Academic Hospital, which serves the north-western townships of Pretoria. Tension-type headaches formed 22% of the headaches. The majority were migraines. This could be explained by possible referral bias, and the fact that a significant number of people with mild or infrequent headaches self-medicate.[2] Migraine attacks tend to be accompanied by intense pain, hence afflicted individuals frequently present at healthcare centres. A German study also found migraines to be more common than tension-type headaches.[3] The male to female ratio has been reported to be 1:3 within the Dr George Mukhari Academic Hospital tension-type headache group. A Russian study found the female gender to be one of the significant associations with a primary headache (odds ratio 2.9, confidence interval: 2.1-4.1).[4] Eighty-two per cent of Dr George Mukhari Academic Hospital patients with tension-type headaches were aged 20-59 years, while only 12% were ≥ 60 years. This highlights the fact that tension-type headaches are a condition of the economically viable adult.

Clinical presentation

Tension-type headaches typically present with mild to moderate pain, which is usually bilateral, with involvement of the temporal regions. A significant number of patients do not present with the commonly described band, i.e. discomfort around the head. The pain may be scattered, extend from the head to the back of the neck, and/or to the temporomandibular joint. A detailed history increases the chances of a correct diagnosis being made, and subsequent effective management.

The patient history should include:

- *Age (e.g. > 50 years):* Giant cell arteritis, a mimicker of tension-type headaches and cause of blindness,[5] should be considered in this age group.
- Chronicity of the pain.
- *Location of the pain:* There is often a typical location for tension-type headaches, as described in Table I.
- *Associated symptoms:* These symptoms include visual symptoms and chronic fatigue.
- *Intensity:* The use of an imaginary scale from 0-10 to describe the intensity of the headache could help in diagnosis and follow-up.
- Frequency and duration.
- *Aggravating factors:* These factors include straining and a sudden change in the position.
- *Relieving factors:* Examples of relieving factors are rest and sleep.
- *Course:* Describing the course of the headache will help to establish whether or not the headaches are worsening.
- *Medical history:* This includes co-morbidities which could influence treatment choice.
- *Sleep habits:* This encompasses insomnia and snoring.
- Smoking and alcohol use.

Table I: Diagnostic criteria of a tension-type headache according to the International Headache Society classification[6]

2.1 Infrequent episodic tension-type headache
A At least 10 episodes occurring on < 1 day per month on average (< 12 days per year).
B A headache lasting from 30 minutes to seven days.
C A headache with at least two of the following characteristics: bilateral location; of a pressing or tightening (non-pulsating) quality; of mild or moderate pain intensity; and not aggravated by routine physical activity, such as walking or climbing stairs.
D Both of the following: No nausea or vomiting (anorexia may occur), and no more than one episode of photophobia or phonophobia.
E Not attributed to another disorder.

2.2 Frequent episodic tension-type headache

As for 2.1, except for:

A At least 10 episodes occurring on ≥ 1 day but < 15 days per month, for at least three months (≥ 12 and < 180 days per year).

2.3 Chronic tension-type headache

A A headache occurring on ≥ 15 days per month on average for > 3 months (≥ 180 days per year).
B A headache that last for hours, or may be continuous.
C As for 2.1 C.
D Both of the following: No more than one episode of photophobia, phonophoiba or mild nausea; and neither moderate or severe nausea and vomiting.

- *Medication:* Information on this is needed to establish treatment failures or analgesic overuse.
- *Impact of the headache:* This pertains to its effect on schooling, work and family.

Circardian variation has been demonstrated, with average intensity tending to be less in the morning, building up after noon, and reducing again in the evening.[7] More studies are needed in this regard as this would provide better insight into the pathophysiology and subsequent management of tension-type headaches.

A multicentre European and Latin American study on nine countries and 16 centres, found that the number of times that a correct diagnosis was made was significantly higher in headache participants who kept a headache diary, than in those without. The recommendation is for patients to document the relevant facts for approximately a month.[8] The headache diary helps with diagnostic precision, documenting frequency, possible triggers and response to treatment. Thus, it helps in the creation of tailor-made management for each individual patient.

With tension-type headaches, the neurological examination is usually normal, albeit with some muscle tenderness in the neck and temporal muscles. However, the examination remains very important with regard to determining the presence of "red flag" signs.

When assessing headaches, "red flag" signs include:

- Recent-onset headaches.
- *Headaches that have changed in character:* This refers to the worsening frequency or worsening intensity of the headache.
- *Exertion headaches:* This refers to the headache worsening with a change in position or the start of Valsalva-like sneezing.
- *Associated encephalopathy:* This refers to confusion, obtundation and drowsiness, as well as seizures and coma.
- Motor and sensory signs.
- Cranial nerve abnormalities, including papilloedema.
- Signs of meningeal irritation.

Vague signs, like yawning, could be an indication of something ominous. e.g. space occupation, especially in the posterior fossa with pressure on the brainstem.[9]

The clinician must also be cognisant of the fact that confusion could be subtle and yet a signal of danger, e.g. meningitis. It should also be borne in mind that papilloedema can be the only abnormality found in a seemingly normal patient with a headache and no other neurological deficits.

Paraclinical tests (brain imaging and blood tests) are only important in excluding other conditions, but are otherwise not necessary in the context of tension-type headaches.

Classification

Tension-type headaches are classified into three subtypes; infrequent episodic tension-type headaches (< 1 day of headaches per month), frequent episodic tension-type headaches (1-14 days of headaches per month), and chronic tension-type headaches (≥ 15 days of headaches per month). The underlying pathophysiology and impact on standard of living differs between the different subtypes, and so do the management strategies.

Associations

Sleep disorders

The majority of people with tension-type headaches have co-existing insomnia. Sleep disturbances have been found to exacerbate and even result in the "chronification" of tension-type headaches. Chronic tension-type headaches have been found to be the most common type of headache secondary to sleep apnoea and sleep-related breathing disorders.[10]

Bruxism

There isn't enough scientific evidence to show a clear association between bruxism and tension-type headaches, or even migraines.[11]

Stress

A positive association between stress intensity and headache frequency was demonstrated in a longitudinal, population-based study on more than 5 000 participants.[12]

Psychiatric conditions

Psychiatric conditions were found to be commonly associated with tension-type headaches in some studies, the most common being depression.[13] However, generalised anxiety disorders were found to be greater in patients with chronic primary headaches, including tension-type headaches, in other studies. To date, no

studies have used standardised, validated methods to assess an association between psychiatric conditions and primary headache prevalence.[14]

Fibromyalgia

Fibromyalgia is a condition characterised by widespread musculoskeletal pain, associated with psychological manifestations, like mood disturbances and depression. Tension-type headaches and migraines have been found to have high co-morbidity with fibromyalgia.[15]

Pathogenesis

The pathophysiology of tension-type headaches is not fully understood. However, present day understanding is that peripheral and central mechanisms underlie tension-type headaches. Enzyme-linked immunosorbent assay tests on 96 participants with tension-type headaches revealed raised interleukin (IL)-8 and monocyte chemoattractant protein-1. The authors concluded that proinflammatory mechanisms may play a role in the pathophysiology of tension-type headaches.[16] Other cytokines, IL-1β and IL-18, have also been found to be raised in the chronic tension-type headaches.[17]

Central nervous system excitability from repetitive and sustained pericranial myofascial input has been postulated as a possible cause of episodic tension-type headaches changing into chronic tension-type headaches. Nitric oxide has also been found to play an important role in the pathogenesis.[18]

Genetics

The environment seems to play a more significant role in causing infrequent episodic tension-type headaches. However, genetic factors have been found to play a partial role in frequent episodic and chronic tension-type headaches.[19]

Management

Automatically prescribing pain killers to headache sufferers is the wrong approach since it may be ineffective and even dangerous.

Conducting a sound assessment will guide the clinician as to whether or not to use a medical or non-medical management approach, or both. Furthermore, medical management could be confined to an acute medical intervention to abort a headache episode, or with added prophylactic mediation. The latter reduces the frequency and intensity of chronic headaches. Infrequent headaches do not require prophylaxis.

Non-medical management

Physiotherapy has been shown to be an effective management option for chronic, tension-type headaches in randomised controlled trials.[20] Cognitive behaviour therapy has also been found to be useful, albeit in a select group of patients.[21] Acupuncture was shown to be an efficacious and relatively cost-effective management option in a Cochrane review.[22]

Acute medical management

Acetaminophen (paracetamol) 500-1 000 mg and aspirin 500-1 000 mg, have been demonstrated to be an effective first-line treatment for episodic tension-type headaches in most placebo-controlled trials. [23,24] Fast absorptive formulations of the latter are preferred for rapidity of action.[25] It is worth noting that these simple analgesics are not effective for chronic tension-type headaches. There is also a risk of overuse, with adverse effects. Nonsteroidal anti-inflammatory drugs (NSAIDs) [arylpropionic acid (e.g. naproxen and ibuprofen)], and heteroaryl acetic acids (e.g. indomethacin and diclofenac) are effective first-line options too.[26,27] A combination of NSAIDs with acetaminophen has been shown to be superior to acetaminophen alone.[28] The frequent use of medication can worsen, rather than help, headaches.[29] Analgesic-rebound headaches necessitate a break in the usage of analgesics, i.e. a "medication holiday."[30] Gastric ulcers are another potentially dangerous adverse effect with overuse.

Prophylaxis

Tricyclic antidepressants (TCAs), e.g. amitryptilline, were shown to be an effective and more efficacious option than selective serotonin reuptake inhibitors in preventing attacks in a meta-analysis of 37 studies.[31] The dose of the TCA ranges between 10-75 mg (higher doses have been given but with more side-effects) in the evenings. It is recommended that the clinician should try to wean the patient off the TCA between 6-12 months. Patients on monoamine oxidase inhibitors should never be given a TCA in combination. The clinician should also be aware of other contraindications, such as recent myocardial infarction.

Botulinum toxin A

A modest effect in the prophylaxis of both migraine and tension-type headaches has been shown in studies, and there is also a need for further prospective, randomised, double-blinded trials in this regard.[32]

Advising headache sufferers to modify their lifestyle, e.g. to reduce smoking and participate in exercise, is common practice and seems to work for some patients. Again, there is a need for prospective cohort studies.[33]

References

1. Stovner LJ, Hagen K, Jensen R, et al. The global burden of headache: a documentation of headache prevalence and disability worldwide. Cephalalgia. 2007;27(3):193-210.
2. Rasmussen BK, Jensen R, Olesen J. Impact of headache on sickness absence and utilisation of medical services: a Danish population study. J Epidemiol Community Health. 1992;46(4):443-446.
3. Schramm SH, Obermann M, Katsarava Z, et al. Epidemiological profiles of patients with chronic migraine and chronic tension-type headache. J Headache Pain. 2013;14(1):40.
4. Ayzenberg I, Katsarava Z, Sborowski A, et al. The prevalence of primary headache disorders in Russia: a countrywide survey. Cephalalgia. 2012;32(5):373-381.
5. Rana AQ, Saeed U, Khan OA, et al. Giant cell arteritis or tension-type headache?: a differential diagnostic dilemma. J Neurosci Rural Pract. 2014;5(4):409-411.
6. Headache Classification Subcommittee of the International Headache Society. The International Classification of Headache Disorders: 2nd edition. Cephalalgia. 2004;24 Suppl 1:9-160.
7. Kikuchi H, Yoshiuchi Y, Komaki G, Akabayashi A. Diurnal variation of tension-type headache intensity and exacerbation: an investigation using computerized ecological momentary assessment. Biopsychosoc Med. 2012;6(1):18.
8. Jensen R, Tassorelli C, Rossi P, et al. A basic diagnostic headache diary (BDHD) is well accepted and useful in the diagnosis of headache. A multicentre European and Latin American study. Cephalalgia. 2011;31(15):1549-1560.

9. Saura H, Beppu T, Matsuura H, et al. Intractable yawning associated with mature teratoma of the supramedial cerebellum. J Neurosurg. 2014;121(2):387-389.
10. Rains JC, Davies RE, Smitherman TA. Tension-type headache and sleep. Curr Neurol Neurosci Rep. 2015;15(2):520.
11. De Luca Canto G, Singh V, Bigal ME, et al. Association between tension type headache and migraine with sleep bruxism: a systematic review. Headache. 2014;54(9):1460-1469.
12. Schramm SH, Moebus S, Lehmann N, et al. The association between stress and headache: a longitudinal population-based study. Cephalalgia. 2014;pii: 0333102414563087 [Epub ahead of print].
13. Bera SCL, Khandelwal SK, Sood M, Goyal V. A comparative study of psychiatric comorbidity, quality of life and disability in patients with migraine and tension type headache. Neurol India. 2014;62(5):516-520.
14. Mercante JP, Peres MF, Bernik MA. Primary headaches in patients with generalized anxiety disorder. J Headache Pain. 2011;12(3):331-338.
15. De Tommaso M. Prevalence, clinical features and potential therapies for fibromyalgia in primary headaches. Expert Rev Neurother. 2012;12(3):287-295.
16. Domingues RB, Duarte H, Rocha NP, Teixeira AL. Increased serum levels of interleukin-8 in patients with tension type headache. Cephalalgia. 2014; pii: 0333102414559734 [Epub ahead of print].
17. Della Vedova C, Cathcart S, Dohnalek A, et al. Peripheral interleukin -1β levels are elevated in chronic tension-type headache patients. Pain Res Manag. 2013;18(6):301-306.
18. Ashina S, Bendtsen L, Ashina M. Pathophysiology of tension-type headache. Curr Pain Headache Rep. 2005;9(6):415-422.
19. Russel MB. Genetics of tension-type headaches. J Headache Pain. 2007;8(2):71-76.
20. Chaibi A, Russel MB. Manual therapies for primary chronic headaches: a systematic review of randomized controlled trials. J Headache Pain. 2014;15:67.
21. Barbanti P, Egeo G, Aurilia C, Fofi L. Treatment of tension-type headache: from old myths to modern concepts. Neurol Sci. 2014;35 Suppl 1:17-21.
22. Schiapparelli P, Allais G, Rolando S, et al. Acupuncture in primary headache treatment. Neurol Sci. 2011;32 Suppl 1:S15-S18.
23. Steiner TJ, Lange R, Voelker M. Asprin in episodic tension-type headache: placebo-controlled dose ranging comparison with paracetamol. Cephalalgia. 2003;23(1):59-66.
24. Lampl C, Voelker M, Steiner TJ. Aspirin is first-line treatment for migraine and episodic tension-type headache regardless of headache intensity. Headache. 2012;52(1):48-56.
25. Lecchi M, D'Alonzo L, Negro A, Martelletti P. Pharmacokinetics and safety of a new aspirin formulation for the acute treatment of primary headaches. Expert Opin Drug Metab Toxicol. 2014;10(10):1381-1395.
26. Prior MJ, Cooper KM, May LG, Bowen DL. Efficacy and safety of acetaminophen and naproxen in the treatment of tension-type headache. A randomized, double blind, placebo-controlled trial. Cephalalgia. 2002;22(9):740-748.
27. Kubitzek F, Ziegler G, Gold MS, et al. Low-dose diclofenac potassium in the treatment of episodic tension-type headache. Eur J Pain. 2003;7(2):155-162.
28. Schachtel BP, Furey SA, Thoden WR. Nonprescription ibuprofen and acetaminophen in the treatment of tension-type headache. J Clin Pharmacol. 1996;36(12):1120-1125.
29. Hawkes N. Too frequent use of painkillers can cause rather than cure headaches. BMJ. 2012;345:e6281.
30. Stiefelhagen P. Analgesic-induced headache. Only a medication holiday will help here. MMW Fortschr Med. 2014;156(11):28.
31. Jackson JL, Shimeall W, Sessums L, et al. Tricyclic antidepressants and headaches: a systematic review and meta-analysis. BMJ. 2010;341:c5222.
32. Gady J, Ferneini EM. Botulinum toxin A and headache treatment. Conn Med. 2013;77(3):165-166.
33. Winter AC, Hoffmann W, Meinsinger C, et al. Association between lifestyle and headache. J Headache Pain. 2011;12(2):147-155.