Chiropractic Management of Adults with Cervicogenic or Tension-Type Headaches: a Systematic Review and Clinical Practice Guideline

Explanation of the recommendations

Each statement is supported by references and an assessment of the quality of the evidence and strength of the recommendation, based on:

- **QA: Quality Assessment of the Evidence based on GRADE (Grading of Recommendations, Assessment, Development, & Evaluation)**, a system for evaluating the quality of the evidence supporting the statement.[1–4]

Level of evidence	Quality rating	Definition
A	High	Further research is unlikely to affect confidence in the estimate of effects of intervention. • More than one high-quality study with consistent outcomes
B	Moderate	Further research is likely to affect confidence in the estimate of effects of intervention. • Only one high-quality study *or* • Several lower quality studies
C	Low	Further research is very likely to affect confidence in the estimate of effects of intervention and likely to change the estimate. • One or more studies with severe limitations
D	Very Low	Any estimate of effect uncertain • Only expert opinion *and/or* • No direct research evidence *or* • Very low-quality evidence

*Source: GRADE (Grading of Recommendations Assessment, Development and Evaluation) Working Group 2007 (modified by the EBM Guidelines Editorial Team) http://www.essentialevidenceplus.com/product/ebm_loe.cfm?show=grade

- **SOR: Strength of the Recommendations.** SOR factors in both the level of supporting evidence and our confidence that beneficial effects of the intervention outweigh any undesirable effects.
  The recommendation strength is indicated as follows:
  ↑↑ = Strong recommendation
  ↑ = Weak recommendation

Informed consent/risks and benefits

	QA	SoE
IC1. Informed consent is a process involving direct communication between the clinician and patient. Explain all procedures, including examination, diagnosis and treatment options (including no treatment) in terms the patient understands. Explain both benefits and risks.[4] Ask the patient if they have any questions; answer them and affirm that the patient understands, in order to make an informed decision.[4] Record the discussion and patient's consent in the medical record.	**D**	↑↑
Specific comments:		
IC2. Adhere to local/regional legal requirements. If necessary, seek advice on compliance from the state licensing board. Additional guidance is available from the American Chiropractic Association (ACA) and the Association of Chiropractic Colleges (ACC).	**D**	↑↑

General diagnostic considerations—history, examination and special tests

History

	QA	SoR
H1. Record a history that includes current symptoms, health status, previous and concurrent treatment and psychosocial factors. Components should include:[45,46] 1. Assessment of red/orange flags[45] (see Table 1) and possible contraindications for nonpharmacologic interventions, with particular emphasis on high-velocity, low-amplitude spinal manipulation. (see Table 2) 2. Assessment of yellow flags (that is, psychosocial factors that may influence the treatment response).[47] 3. History of significant and/or recent physical trauma 4. Headache onset, characteristics and precipitating factors 5. Pain type, severity, location, frequency and duration 6. Provocative and relieving factors 7. Previous interventions and response 8. Current and previous self-care strategies 9. Diagnostic tests and results 10. Current medications, both prescription and nonprescription, particularly those for HA 11. Current nutraceuticals and supplements 12. Comorbidities, family history and psychosocial factors 13. Lifestyle factors such as diet, sleep quality, physical activity, alcohol and tobacco use	**B**	↑↑

Table 1. Red flags* on history and examination.*[45]	B	↑↑

Red flags: History	**Red flags: Examination**

• Systemic symptoms
  ○ infection, neoplasm, carcinoid, pheochromocytoma
• Cancer history
  ○ brain neoplasm, metastasis
• Sudden onset (thunderclap)
  ○ cranial/cervical vascular disorder
• Age over 50 years
  ○ giant cell arteritis, neoplasm, vascular disorder
• Pattern change or recent onset
  ○ vascular disorder, neoplasm
• Triggered by exertion/coughing
  ○ posterior fossa disorder
• Pregnancy/postpartum
  ○ vascular disorder, preeclampsia, diabetes
• Post-traumatic onset
  ○ hematoma, vascular disorder
• HIV/immunodeficiency
  ○ opportunistic infection
• Pain medication overuse
  ○ medication overuse headache
	• Neurological deficits
	  ○ vascular disorder, mass lesion, infection
	• Positional headaches
	  ○ intracranial hypertension/hypotension
	• Papilledema
	  ○ mass lesion, intracranial hypertension
	• Progressive headache
	  ○ neoplasm, vascular disorder
	• Painful eye with autonomic symptoms
	  ○ posterior fossa, pituitary, cavernous sinus, or ophthalmic pathology, Tolosa-Hunt syndrome

*Red flags, sometimes called “red and orange flags” in the context of headache diagnosis, are signs or symptoms that are suggestive of a potentially serious underlying headache etiology (i.e., secondary headache).[45] In this framework, “orange flags” are items considered less serious in isolation such as fever, items indirectly related to the patient’s presentation, or those which are chronic (e.g., remote trauma), yet can be potentially serious when occurring in combination with other red/orange flag items.[45,48] In comparison, “red flags” should be considered potentially serious even in isolation. Red/orange flags have a high sensitivity but low specificity for identifying secondary headaches.[45,48]

Table 2. Precautions and possible contraindications to nonpharmacologic interventions for cervicogenic or tension-type headaches.[49–51]*	**C**	↑↑

Condition	Cervical HVLA manipulation[a]	Cervical mobilization[b]	Soft tissue techniques[c]	Needling therapy	Therapeutic exercise	TENS
Active spinal infection	C	C	C	C	C	C
Active inflammatory arthritis	C	C	✓	✓	✓	✓
Anticoagulation therapy	C	✓	P	P[52]	✓	✓
Cervical artery dysfunction[d]	C	P	P	✓	C	✓
Cervical ligamentous instability	C	✓	✓	✓	C	✓
Degenerative cervical myelopathy	C	✓	✓	✓	C	✓
Complicated or late (37+ weeks) pregnancy	C	✓	✓	P[53]	✓	C
Spinal metastasis	C	P	P	P[54]	P	P[55]

* Symbols: C represents potential contraindications; P indicates precaution, such as using light biomechanical force/presssure, and ✓ indicates there is typically no contraindication in this context.

[a] Application of high-velocity, low-amplitude biomechanical force to a joint[56]

[b] Application of low-velocity biomechanical force to a joint[56]

[c] Including instrument-assisted soft tissue techniques

[d] Examples include: aneurysm, atherosclerosis, dissection, thrombosis and vascular anomalies[57]

Diagnostic considerations

D1. Establish a working diagnosis of CGH or TTH from the history and examination.[8]	**A**	↑↑
D2. Routine diagnostic imaging is not recommended for patients with diagnosed cervicogenic or tension-type headache.[7,45,46,58,59] Factors which indicate the need for imaging are: 1. Red flags on history or physical exam 2. Severe and/or progressive neurologic deficits No improvement after a reasonable course (4-6 weeks) of care	**A**	↑↑

Definitions

Tension-type headache (TTH) is classified as a primary headache with palpable pericranial tenderness, typically bilateral. It is characterized as episodic (infrequent or frequent) or chronic.[8] Infrequent episodic TTH occurs less than once a month and is not addressed in this guideline. Frequent episodic TTH is characterized by at least 10 episodes occurring on 1–14 days/month on average for >3 months and does not exhibit the additional symptoms characteristic of migraine. Chronic TTH is similar to frequent episodic except that it occurs more than 15 days/month for at least 3 months.[8]

Cervicogenic headache (CGH) is classified as a secondary headache caused by a disorder of the cervical spine and its related structures (bone, disc and/or soft tissue), usually but not always associated with neck pain. When cervical myofascial pain is the cause, the headache is more appropriately classified as TTH.[8]

Diagnosis of CGH[8]

D1. Diagnosis of CGH relies on clinical and/or imaging evidence of a cervical spine disorder, reasonable exclusion of other headache disorders, and any one of the following: 1. Temporal relation to cervical disorder 2. Symptoms correlate with cervical disorder (e.g., improve/resolve) 3. Reduced cervical range of motion or exacerbation of headache with provocative maneuvers 4. Headache alleviated after diagnostic block	**B**	↑↑

Diagnosis of TTH[8]

Tension-type headache (TTH) is diagnosed based on recurrent episodes of typically bilateral, pressing, or tightening headaches lasting from minutes to days which are mild to moderate in intensity, and examination findings of pericranial tenderness (i.e., frontal, temporal, masseter, pterygoid, sternocleidomastoid, splenius, and trapezius muscles). TTH are not aggravated by routine physical activities and never include moderate or severe nausea or vomiting, yet may include one of photophobia, phonophobia or mild nausea. Other headaches should be ruled out although TTH may overlap with migraine features.	**B**	↑↑

Examination

	QA	SoR
E1. For suspected TTH or CGH, conduct a physical examination focusing on musculoskeletal and neurological components related to the neck and head, including an assessment of pain upon palpation of the neck, pericranial region, and appropriate provocative testing for the cervical spine when indicated.[7,58]	**A**	↑↑

General Management Considerations

	QA	SoR
G1. Select intervention strategies that are congruent with patient preference, are without contraindications and emphasize patient-centered care.[7,9,58]	**B**	↑↑

Outcome assessment

O1. Consider using Patient Reported Outcome Measures (PROMs) to assess patient pain and function, and to assess progress over time.
• Examples of validated instruments are: pain intensity: Numeric Pain Rating Scale (NPRS); function/disability: Neck Disability Index (NDI).
• Examples of validated headache-specific instruments are:
  ○ Headache Impact Test 6-item (HIT-6).[60]
  ○ Headache Disability Index[61]
	B	↑

Considerations for frequency and duration of treatment

	QA	SoR
F1. Administer any of the recommended interventions 1-3x per week for an initial trial of care and taper treatment frequency over the course of the treatment plan, based on the patient's response to care.[5,7,30,40,62]	**C**	↑↑
F2. Continue the course of care that best manages the patient's headache pain intensity, frequency and duration.	**C**	↑↑
F3. Use PROMs to assist in determining the ongoing necessity and frequency of care.	**B**	↑
F4. For patients with contraindications, or who do not adequately respond to an initial course of approximately 4 weeks of conservative care, consider referral to and/or co-management with appropriate pharmacologic providers or medical specialists for further evaluation and/or management of TTH/CGH.[46]	B	↑↑

Cervicogenic headache

Interventions	QA	SoR
CGH1. Offer spinal manipulation[7,20,22,24,27,30]	A	↑↑
CGH2. Offer multimodal therapy that includes spinal manipulation and any combination of joint mobilization, soft tissue and/or modalities.[24]	B	↑
CGH3. Consider offering or referring for dry needling when appropriate (e.g., to address suspected trigger points of the cervical pinal musculature).[31,36]	B	↑

CGH4. Provide therapeutic exercises in a multimodal program (e.g., stretching, strengthening, endurance, and/or postural correction) and/or select individual exercises guided by patient preference.[7,19,20,24]	B	↑

Tension-type headache

Interventions

	QA	SoR
TTH1. Provide spinal manipulation combined with joint mobilization, soft tissue techniques and/or modalities.[6]	B	↑
TTH2. Offer joint mobilization and/or soft tissue techniques.[6,39–41]	B	↑↑
TTH3. Offer self-management strategies such as patient education, relaxation, mindfulness-based stress reduction, etc.)[9,32]	C	↑↑
TTH4. Consider offering or referring for acupuncture, electroacupuncture or dry needling as part of a multimodal approach.[31,33,34,37-39,41-43]	B	↑↑

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