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Osteopathic manipulative techniques in the treatment of vestibular dizziness not related to the cervical spine

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To the Editor,

We read the paper of Rehman et al. [1] with great interest. This well-conducted systematic review (SR) aimed to evaluate the potential effect of osteopathic manipulative treatment (OMT) in treating dizziness due to neuro-otological disorders. Authors found moderate-quality evidence that treatment with articular OMT techniques was significantly associated with decreased disability associated with dizziness, dizziness severity, and frequency [1]. While we congratulate the authors for the high-quality methods utilized in this SR, we want to further contribute to the discussion of these results by reflecting on the definition of the so-called “neuro-otological disorders” and the need to differentiate between vestibular and nonvestibular disorders when assessing the effect of manual approaches to instability and dizziness. Furthermore, we want to comment specifically on the inclusion criteria of primary studies in this review and the potential impact on the results and conclusions.

Twelve studies were finally analyzed by Rehman et al. [1] Five studies (42%) included participants with a vestibular cause of dizziness (1 Meniere’s disease [2], two benign paroxysmal positional vertigo [BPPV] [3, 4], and two studies peripheral vestibular causes [5, 6]). One study (8%) included

patients with a neurological cause (Parkinson’s disease) [7], and six studies (50%) included patients with cervicogenic dizziness (CD) [8–12]. Typically, neuro-otologic disorders are related to inner ear pathology and/or their related peripheral and central neurological pathways [13, 14]. Therefore, causes of dizziness are commonly divided between central and peripheral disorders and comprise medical conditions, neurological and vestibular disturbances, and miscellaneous disorders [14–16]. Undoubtedly, although the cervical spine should be considered when managing patients with dizziness due to peripheral causes, there is a consensus that the diagnosis of CD is one exclusion once neuro-otological causes have been ruled out [14, 17–21]. As such, based on the most current classifications of dizziness presentations [13–16, 22–25], we argue that CD should not be included as a neuro-otological disorder.

Beyond considerations of taxonomy, the inclusion of studies with patients with CD has profoundly influenced the results of Rehman et al. [1]. Only articles with eligibility criteria for CD [8–12] were pooled for meta-analysis and compared for articular OMT techniques between the outcomes and control comparators. In fact, all of them specifically excluded vestibular causes or the possible involvement of extra-cervical causes. Therefore, because vestibular causes have been excluded from the main analysis, caution should be taken when concluding that OMT is an effective approach for dizziness caused by neuro-otological disorders.

As demonstrated by the results obtained by Rehman et al. [1], manual therapy techniques, such as OMT or analogous techniques, show some effectiveness for treating dizziness related to the cervical spine. However, we argue that these techniques are less effective when applied to pure vestibular disorders (e.g., BPPV, Meniere’s disease, labyrinthitis, vestibular neuronitis, and presby-vestibulopathy). ‘Dizziness’ is an umbrella term encompassing vertigo, unsteadiness, imbalance, presyncope, and other ‘non-specific’ sensations [14]. Certainly, the upper neck has an important contribution to the proprioceptive information of the vestibular nuclei and thus contributes largely to motion perception. Moreover, dizziness and vertigo may

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coexist or occur sequentially [18]; however, *true* vertigo is rarely seen when only the cervical spine is involved in dizziness [20, 22, 26]. Notwithstanding, in this field, patients can present with multiple and overlapping symptomatology simultaneously [27]. Therefore, in a clinical scenario, time should be spent carefully discussing with patients their individual descriptions of their experience of dizziness. This should support the clinical findings from diagnostic procedures in order to construct a rounded and person-centered understanding of the etiology and the most appropriate management [13, 15].

Treatment strategies should be informed by a working understanding of the underlying causes of dizziness. The differentiation between vestibular, nonvestibular, and consideration of mixed disorders is of utmost importance. Furthermore, any intervention should be delivered within a well-developed therapeutic relationship whereby time and consideration can be given to the patient's psychosocial context, which may be interacting with the biological factors in a causative way [28, 29]. From there, clinicians should explore the broad spectrum of therapeutic options and select the most appropriate approach.

The evidence supports the use of vestibular rehabilitation for peripheral vestibular dizziness either in acute or chronic phases (e.g., Meniere's disease, BPPV) and also in some neurological causes (e.g., vestibular migraine) [15, 30]. Additionally, pharmacological treatment might be required for dizziness related to central disorders like multiple sclerosis or Parkinson's disease and for acute peripheral

vestibular insults like neuronitis, Meniere's disease, or labyrinthitis.

Regarding OMT and/or analogous techniques, we argue that they could be effective in two different situations. First, they may have a role and should be considered as an option when the patient presents with CD [9, 18]. To be clear, this is a clinical situation characterized by imbalance, unsteadiness, disorientation, neck pain, and limited cervical range of motion that may be accompanied by a headache caused by impaired proprioceptors and nociceptors in the upper neck [20, 21, 26]. Furthermore, OMT and similar manual therapy techniques could also be useful as an adjunct to vestibular rehabilitation in several cases due to the narrow relationship between the vestibular and proprioceptive cervical systems [15]. This is the case of the 'residual dizziness' that appears when poor central vestibular compensation occurs after the reversal of peripheral vestibular pathology. In this situation, the cervical spine could play a role in reweighting the afferent information in the vestibular nuclei [16]. Figure 1 summarizes our views on the role of the different potential therapeutic strategies for dizziness, including OMT.

In conclusion, we acknowledge the role that OMT may have in the treatment of dizziness. The results of Rehman et al. [1] provide some supporting evidence for their use in managing CD. Moreover, although not formally tested, OMT could also have a potential therapeutic effect in treating patients with poor vestibular compensation, thereby helping to manage patients with chronic dizziness and instability. However, we argue that most neuro-otological disorders

CAUSES of Dizziness	CONDITIONS	THERAPEUTIC APPROACH to Dizziness
CENTRAL CAUSES	Multiple Sclerosis Parkinson's Disease Stroke Tumors	PHARMACOLOGICAL + VESTIBULAR RHB
	Vestibular Migraine	VESTIBULAR RHB + PHARMACOLOGICAL
	Fluctuant or Chronic dizziness after Vestibular Migraine	OMT + VESTIBULAR RHB
	Concussion	PHARMACOLOGICAL + VESTIBULAR RHB + OMT
PERIPHERAL CAUSES	Acute Neuritis / Acute Meniere's Disease Other Acute Uni or Bilateral Hypofunctions	VESTIBULAR RHB + PHARMACOLOGICAL
	Dizziness due to poor compensation after: Neuritis, Meniere's Disease or Other Uni or Bilateral Hypofunctions	OMT + VESTIBULAR RHB
	Benign paroxysmal positional vertigo (BPPV)	CANALITH REPOSITIONING PROCEDURE (CRP)
OTHER CAUSES	Cervicogenic	OMT + PHYSICAL THERAPY + PHARMACOLOGICAL + VESTIBULAR RHB
	Cardiovascular / Metabolic Psychiatric Medication Induced Orthostatic Hypotension	MEDICAL AND PHARMACOLOGICAL CARE

Figure 1: Pathways for clinical care in disorders causing dizziness. Adapted from Muncie et al. [15] and Luxon [16]. BPPV, benign paroxysmal positional vertigo; CRP, canalith repositioning procedure; OMT, osteopathic manipulative treatment; RHB, rehabilitation.

(primarily involving vestibular disturbances) will require other therapeutic approaches and are unlikely to be resolved by the application of OMT or analogous techniques alone. Therefore, based on the literature and clinical experience, we propose a comprehensive therapeutic approach to neuro-otological disorders, strongly based on the underlying causes, to decide the best clinical care for the dizzy patient.

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