

## Use of Mannitol and Vitamins B in Piriformis Syndrome: A Possible Treatment Modality?

Dear Editor,

Piriformis syndrome is a neuromuscular condition caused by irritation or compression of the sciatic nerve in the sub-pyramidal canal.<sup>[1]</sup> There are well-established treatments for this condition, including physical modalities and interventions such as corticosteroid or botulinum toxin injections. The use of mannitol infusion to treat piriformis syndrome has not been extensively described. We read with great interest a recent publication by Huang *et al.* with regard to the combined use of 20% mannitol infusion and oral Vitamins B as a potential treatment modality for this condition.<sup>[2]</sup> A few comments can be made from this publication.

First, clinicians need to understand the mode of action of mannitol and interpret studies pertaining to its use carefully. Mannitol, chemically 1,2,3,4,5,6-hexanehexol (C<sub>6</sub>H<sub>8</sub>[OH]<sub>6</sub>) has been widely used in raised intracranial pressure, rhabdomyolysis, and renal protection in cardiovascular conditions due to its osmotic properties.<sup>[3]</sup> In theory, as a neural prolotherapy agent, mannitol could help in neuromuscular condition by extinguishing pain and reducing pain as in the case of piriformis syndrome. The postulation that mannitol binds to transient receptor potential cation channel subfamily V member 1 receptors, inhibiting the release of inflammatory chemicals from neurons and restoring neural function remains to be validated by future research.<sup>[4]</sup> Even though Huang *et al.* reported a significant reduction in swelling of the sciatic nerve, pain, and function after the combined treatment, there is lack of control groups in the study design of 22 patients who received 5 days of mannitol and 6 weeks of oral Vitamins B.<sup>[1]</sup> It remains unclear for the extent of contribution by mannitol *per se* in clinical improvement. We support the use of mannitol as a

treatment modality but suggest future randomized control trials to answer this question.

Second, while mannitol seems promising as a treatment modality, one needs to be mindful of its side effects and when to consider this modality in piriformis syndrome. An in-depth discussion of the potential side effects of mannitol is beyond the scope of this letter; however, clinicians and researchers should be aware of potential side effects such as hypernatremia, heart failure, and allergic reactions.<sup>[3]</sup> In cases, where patients fail to respond to conservative treatment, the clinician should discuss the risk-benefits of administering mannitol. It might be possible to advocate specific guidelines for the use of mannitol in piriformis syndrome in terms of dosing and duration.

Finally, while it appears reasonable to provide oral Vitamins B for piriformis syndrome patients who are symptomatic with functional limitation, the treatment regimen in pain relief remains unclear. Current evidence leans toward higher doses and short-term improvement in pain and paresthesia. Vitamins B are common oral medications to treat peripheral neuropathy and neuropathic pain. Specifically, methylcobalamin (Mecbl), one of the analogs of Vitamin B12, has been postulated to have some analgesic property of improving neuropathic pain by enhancing the nerve conduction velocities.<sup>[5]</sup> Conditions being treated previously include back pain and various types of neuralgia such as trigeminal neuralgia. In piriformis syndrome, there is, at present, lack of conclusive randomized controlled trial using Mecbl to validate the benefits of pain relief. Oral Vitamins B are safe with few side effects and generally well-tolerated. Therefore, clinicians should be open to the

use of Vitamins B in patients with piriformis syndrome while awaiting more studies on guiding its regimen.

In conclusion, we support the use of intravenous mannitol and oral Vitamins B as a promising modality to treat piriformis syndrome. However, clinicians need to be aware that more large-scale clinical trials are needed to validate its efficacy. There is a need to establish clinical guidelines for the use of mannitol and Vitamins B in piriformis syndrome, especially those who failed initial conservative therapies. The treatment regimen using combined mannitol and Vitamins B will need further guidance from future research.

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### Conflicts of interest

There are no conflicts of interest.

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