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HEAD TO HEAD

Should we abandon cervical spine manipulation for mechanical neck pain? Yes

Benedict Wand and colleagues argue that the risks of cervical spine manipulation are not justified, but **David Cassidy and colleagues** (doi:10.1136/bmj.e3680) think it is a valuable addition to patient care

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Cervical spine manipulation (a high velocity, low amplitude, end range thrust manoeuvre) is a common treatment option for mechanical neck pain yet may carry the potential for serious neurovascular complications, specifically vertebral artery dissection and subsequent vertebrobasilar stroke. The non-superiority of manipulation to alternative treatments, coupled with concerns regarding safety, renders cervical spine manipulation unnecessary and inadvisable.

The controversy surrounding the association between manipulation and neurovascular complications is longstanding and not fully resolved, partly because it is difficult to obtain conclusive evidence on rare adverse events. What can be accepted is that the incidence of vertebral artery dissection is low, with estimates between 1 (95% confidence interval 0.5 to 1.4) and 1.7 (1.1 to 2.3) per 100 000 person years in the United States.[1] The estimates for stroke resulting from vertebral artery dissection are lower still, ranging from 0.75 to 1.12 per 100 000 person years,[2] and many are unlikely to be the result of cervical manipulation.

Nevertheless, numerous case studies report neurovascular complications immediately after cervical manipulation,[3] and more robust case-control studies provide consistent evidence of an association between neurovascular injury and recent exposure to cervical manual therapy, particularly manipulation.[4-6] Although absolute risk cannot be accurately estimated, these studies have reported large effects in general populations (adjusted odds ratios 6.62, 95% confidence interval 1.4 to 30[4]; 12.67, 1.43 to 112.0[5]) and in patients under 45 (5.03, 1.58 to 16.07[6]). However, the causal nature of this association has recently been called into question by the findings of one case-crossover study.[7] Although the study found an association between vertebrobasilar stroke and chiropractic care in patients under 45 (3.60, 1.46 to 10.84), a comparable association was found between vertebrobasilar stroke and primary care practitioner visits (2.99, 1.81 to 4.96). The authors suggest that the increased risk after chiropractic treatment may be an artefact of patients seeking care for neck pain resulting from existing vertebral artery dissection rather than the result of treatment itself. Although the results suggest that some cases of vertebrobasilar stroke may be misattributed to manipulation, this does not rule out that some patients have dissection induced by manipulation or that the clinical sequelae are worsened by manipulation in some patients with spontaneous dissection.

To conclude that all adverse neurovascular events seen after manipulation are the manifestation of a pre-existing spontaneous dissection is at odds with several findings. A previous case-control study found that manipulation remained an independent risk factor for dissection after controlling for the previous presence of neck pain (adjusted odds ratio 6.62, 95% confidence interval 1.4 to 30),[4] and another study reported that patients with vertebral artery dissection and previous exposure to manipulation are more likely to present with damage to the more mechanically vulnerable upper cervical portion of the artery than those without exposure (increase in prevalence ratio attributable to manipulation 4.14).[8] Furthermore, patients presenting with conditions that do not share symptoms with vertebral artery dissection (such as low back pain) have reported neurovascular complications after neck manipulation,[9] and it seems most reported cases of vertebral artery dissection and stroke after manual therapy have followed chiropractic care rather than osteopathy or physiotherapy, where manipulation is used less often.[9]

No benefit over alternatives

Though causality is not proved, legitimate concerns remain regarding the risk of such serious events. Whether there are factors that leave some patients more susceptible to dissection remains a matter of conjecture,[1 5] and there are no satisfactory screening procedures that acceptably mitigate this risk.[5] It follows that neck manipulation should be used only if there is substantial and unique benefit associated with this technique.

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On this point the literature is clearer. A recent Cochrane review of randomised controlled trials of neck manipulation or mobilisation concluded that as a stand alone treatment, manipulation provides only moderate short term pain relief versus waiting list control, sham manipulation, or muscle relaxants (standardised mean difference −0.90, 95% confidence interval −1.78 to −0.02), is unlikely to offer meaningful long term benefit for people with neck pain, and does not seem to be better than other manual therapy techniques such as cervical mobilisation (−0.07, −0.47 to 0.32).[10] A recent clinical trial suggests this equivalence remains even in patients whom the clinician deemed particularly suitable for manipulation.[11] Other recent large, high quality randomised trials reinforce the message that manipulation is not superior when directly compared with other physical interventions such as exercise and confers no additional benefit when added to them.[12 13]

Given the equivalence in outcome with other forms of therapy, manipulation seems to be clinically unnecessary. The potential for catastrophic events and the clear absence of unique benefit lead to the inevitable conclusion that manipulation of the cervical spine should be abandoned as part of conservative care for neck pain. In the interests of patient safety, the regulatory and professional bodies associated with professions that use manual therapy should consider adopting this as a formal policy.

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