KOMMENTAR

Vascular accidents after chiropractic spinal manipulation: Myth or reality?

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Summary
The association between chiropractic neck manipulations and vascular accidents is well established. A recent case control study, however, casts doubt on the notion that the association is causal by nature. A detailed critique of that study reveals several weaknesses. Therefore the balance of probabilities seems to indicate that the association may, in fact, be causal.

Key words: chiropractic, manipulation, stroke, risk, vascular accident

Zusammenfassung
Die Assoziation zwischen chirotherapeutischer Manipulation der oberen Wirbelsäule und vaskulären Zwischenfällen ist gut dokumentiert. Eine 2008 publizierte Fall-Kontroll Studie lässt jedoch Zweifel daran aufkommen, dass dieser Zusammenhang kausaler Natur ist. Eine detailierte Kritik dieser Studie identifiziert mehrere Schwächen. Daher ist es wahrscheinlich, dass es sich hier um einen kausalen Zusammenhang handelt.

Schlüsselwörter: Chirotherapie, Manipulation, Schlaganfall, Risiko, vaskulärer Zwischenfall

Several hundred published cases have drawn our attention to an association between chiropractic spinal manipulation and vascular accidents [e.g. 1]. Extension and/or rotation of the neck puts strain on the vertebral artery which, in predisposed individuals, may dissect [1]. This theory would provide a biologically plausible mechanism for these adverse events. But neither anecdotal data nor a plausible theory alone can establish causality. Proponents of chiropractic therefore claim that the association is, in fact, not causal and should therefore not deter us from recommending neck manipulation.

This argument has found support from a Canadian case control study [2]. It is now frequently cited by proponents of chiropractic who claim that chiropractic spinal manipulation is entirely safe. Here I will provide a brief critique of the new evidence [2] and try to put it into a clinical context.

Cassidy's case control study

The paper in question [2] describes a retrospective case-control study and case-crossover analysis. The authors, two of whom are chiropractors, used the data from 818 hospitalized stroke patients and matched them, for the case-control analysis, with 3164 control subjects. For the cross-over analysis, they compared them to data from the same patients from previous time periods. Usage of chiropractic services primary care physicians was extracted from health billing records.

The results indicate that, compared to exposure to treatment by physicians, there was no excess risks of chiropractic therapy. According to proponents of chiropractic, these findings suggest that many stroke patients have a history of consulting chiropractors because they consult these practitioners for their neck pain and headache [2] which can, of course, be precursors of a stroke. According to this theory, the chiropractic treatment would not be a cause but an innocent bystander of the vascular accident.

A critical assessment

The study by Cassidy et al. [2] is no doubt interesting but it also has several flaws which must be taken into account. Its authors acknowledge this fact and state: "Our results should be interpreted cautiously ... we have not ruled out neck manipulation as a potential cause of some vertebrobasilar artery stroke" [2]. Unfortunately this advice is rarely heeded by those who argue that this evidence demonstrates the safety of chiropractic neck manipulation. Particular concerns relate to the following issues:

- Non-hospitalised stroke cases, transient cerebral ischaemia, stroke patients residing in long-term care facilities and patients not covered by the Ontario Health Insurance Plan or patients not reimbursed for consulting a chiropractor were all excluded from the analyses. It is conceivable that these exclusions had a significant influence on the results.
- The authors included all strokes that occurred within 30 days of the index

date. This could have weakened an already weak signal: most strokes associated with chiropractic occurred soon after treatment [1]. Subanalysis of the Cassidy data seem to confirm this; the odds ratio for a stroke within one day of chiropractic is 12.0 compared to 3.1 for the 30 day period [2].

- Most strokes occur spontaneously and relate to the elderly population. The Cassidy analyses [2] included all age groups. This might have further diluted the weak signal. Subanalysis of the Cassidy [2] data confirm that the odds ratios for patients below the age of 45 years are consistently higher than those for patients beyond that age.
- Cassidy et al took their evidence for a stroke from discharge notes. Such notes are notoriously unreliable and no data were provided to show how accurate these data were. This may even be more relevant for vertebrobasilar strokes, the type of stroke relevant in relation to chiropractic neck manipulation [1].

Conclusion

Apart from a plethora of anecdotal data [1], at least two further case-control studies suggest a causal association between chiropractic manipulation and vascular accidents [3, 4]. The analysis by Smith et al [4] made an attempt to control for the possibility of bias through pre-existing neck pain and concluded that manipulation was a risk factor independent of that variable.

The Cassidy study [2] is a valuable contribution to the debate about chiropractic's safety but it is by no means a compelling proof for the harmlessness of chiropractic neck manipulation. In fact, the balance of the currently available evidence would seem to point in the opposite direction.

The most benign interpretation of the totality of the evidence is therefore as follows. There is an association between chiropractic and vascular accidents which not even the most ardent proponents of this treatment can deny. The mechanisms that might be involved are entirely plausible. Yet the nature of this association (causal or coincidental) remains uncertain.

The cautionary principle, demands that, until reliable evidence emerges, we must err on the safe side. Considering also that the evidence for any benefit from chiropractic neck manipulations is weak or absent [5], I see little reason to advise in favour of upper spinal manipulation. □

References

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MITTEILUNGEN

Neue intravenöse Formulierung von Revatio® (Sildenafil) zur Behandlung der PAH

Im Januar 2010 hat die Europäische Kommission Revatio® (Sildenafil) als Injektionslösung für Patienten mit pulmonal-arterieller Hypertonie (PAH) zugelassen, die derzeit Revatio® als orale Gabe erhalten und zeitweise keine orales Medikament einnehmen können, jedoch klinisch und hämodynamisch stabil sind*. Damit ist Revatio® der einzige Phosphodiesterase-5-(PDE-5-) Hemmer, für den die Europäische Kommission eine Zulassung sowohl für eine orale als auch eine intravenöse Formulierung zur Behandlung der PAH erteilt hat.

Revatio® erhielt seine erste Zulassung von der Europäischen Union im Oktober 2005. Revatio® zur oralen Gabe liegt in Form einer 20-mg-Tablette zur 3x täglichen Einnahme vor. Die empfohlene Dosis einer Revatio®-Injektion beträgt 10 mg (entsprechend 12,5 ml) 3x täglich appliziert als intravenöse Bolusinjektion. ■

F. S.

* Die Zulassung muss noch vom BfArM bestätigt werden. Diese länderspezifische Zulassung wird in der ersten Jahreshälfte 2010 erwartet.