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1: J Manipulative Physiol Ther. 1996 Jul-Aug;19(6):371-7. [Related Articles, Lir](#)

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## Safety in chiropractic practice, Part I; The occurrence of cerebrovascular accidents after manipulation to the neck in Denmark from 1978-1988.

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**BACKGROUND:** Problems in ascertaining cases and in determining the total number of treatments have made it difficult to establish the rate of cerebrovascular accidents (CVA) after spinal manipulative therapy.

**OBJECTIVES:** To estimate the occurrence of cerebrovascular accidents after chiropractic treatment to the cervical spine. **DESIGN:** Information was sought on cases of CVA in Denmark during the period 1978-1988 inclusive, through several sources and through a survey of the Danish Chiropractors' Association. Information was sought also on proportion of consultations consisting of cervical treatment and preferred type of therapy. The incidence rate of CVA was calculated for several denominators. **PARTICIPANTS:** Targeted sample in survey 1: all 226 practicing members of the Danish Chiropractors' Association in 1989 [i.e., 99% of the chiropractors in Denmark at that time (response rate 54%)]. In survey 2, a random sample of 40 chiropractors (response rate 72.5%) was used. **OUTCOME MEASURES:** The number of CVAs in relation to the number of chiropractor-years, number of consultations, consultations including neck treatment, upper and lower neck treatment, and type of technique used. **MAIN RESULTS:** Five cases of CVA were identified; one resulted in death and the others in permanent neurologic sequelae of varying severity. One case of CVA appeared for every estimated 1.3 million cervical treatment sessions and 1 for every 0.9 million upper cervical treatment sessions. Rotation techniques were over-represented in relation to their estimated frequency of use. **CONCLUSION:** Although the incidence of CVA after chiropractic SMT was confirmed to be low, there seems to be sufficient evidence to justify a firm policy statement cautioning against upper cervical rotation as a technique of first choice.

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