

Cerebral metabolic changes in men after chiropractic spinal manipulation for neck pain.

[Ogura T](#), [Tashiro M](#), [Masud M](#), [Watanuki S](#), [Shibuya K](#), [Yamaguchi K](#), [Itoh M](#), [Fukuda H](#), [Yanai K](#).

Source

Division of Cyclotron Nuclear Medicine, Tohoku University, Sendai, Japan.

Abstract

BACKGROUND:

Chiropractic spinal manipulation (CSM) is an alternative treatment for back pain. The autonomic nervous system is often involved in spinal dysfunction. Although studies on the effects of CSM have been performed, no chiropractic study has examined regional cerebral metabolism using positron emission tomography (PET).

OBJECTIVE:

The aim of the present study was to investigate the effects of CSM on brain responses in terms of cerebral glucose metabolic changes measured by [18F]fluorodeoxyglucose positron emission tomography (FDG-PET).

METHODS:

Twelve male volunteers were recruited. Brain PET scanning was performed twice on each participant, at resting and after CSM. Questionnaires were used for subjective evaluations. A visual analogue scale (VAS) was rated by participants before and after chiropractic treatment, and muscle tone and salivary amylase were measured.

RESULTS:

Increased glucose metabolism was observed in the inferior prefrontal cortex, anterior cingulate cortex, and middle temporal gyrus, and decreased glucose metabolism was found in the cerebellar vermis and visual association cortex, in the treatment condition ($P < .001$). Comparisons of questionnaires indicated a lower stress level and better quality of life in the treatment condition. A significantly lower VAS was noted after CSM. Cervical muscle tone and salivary amylase were decreased after CSM. Conclusion The results of this study suggest that CSM affects regional cerebral glucose metabolism related to sympathetic relaxation and pain reduction.