

Medical Update Memo

July 6, 2010

Two-year study of cervical cord volume and myelin water in primary progressive multiple sclerosis.

Summary

Researchers at the University of British Columbia in Vancouver examine changes in cervical cord volume over time. Laule C, Vavasour IM, Zhao Y, Traboulsee AL, Oger J, Vavasour JD, Mackay AL, Li DK. *Mult Scler.* 2010 Jun;16(6):670-7.

Details

Spinal cord involvement in multiple sclerosis (MS) is common and an important element in disability. Previous studies demonstrated smaller cervical cord area at the C2 level in MS compared to controls, and a decrease in cord area over 12 months, most marked in primary progressive MS (PPMS).

A subset of subjects participating in a multicentre, double-blind, placebo-controlled clinical trial evaluating the efficacy of glatiramer acetate in PPMS (PROMiSe trial) were followed for 2 years.

24 PPMS subjects, randomized to placebo (n = 9) and glatiramer acetate (n = 15), and 24 matched controls were studied. Cervical cord volume (CCV) at C2-3 was determined using a 3D inversion recovery (IR)-prepared spoiled-gradient echo sequence. Myelin water fraction (MWF) at C2-3 was obtained using a 32-echo IR-prepared relaxation sequence. Scans were repeated at baseline, years 1 and 2.

Baseline CCV was significantly smaller for PPMS than controls [median (interquartile range) 951 (829-1043) vs. 1072 (1040-1129) mm³, p = 0.0004] and MWF trended to be lower in PPMS cord [median (interquartile range) 0.225 (0.187-0.267) vs. 0.253 (0.235-0.266), p = 0.12]. Baseline CCV correlated with baseline Expanded Disability Status Scale, disease duration, brain white and grey matter volume. In PPMS, CCV was significantly decreased at year 1 (-0.83%, p = 0.04) and year 2 (-1.65%, p = 0.02). Baseline MWF

correlated with baseline CCV and brain white and grey matter volume. MWF was significantly decreased from baseline for PPMS at year 2 (-10.5%, $p = 0.01$). Treatment effect was not detected on change in CCV nor MWF.

CONCLUSIONS: Metrics at the level of the cord, including volume and MWF at C2-3, were lower in PPMS than controls and changed over 2 years only in PPMS.

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