Diffusion-tensor MR imaging for evaluation of the efficacy of hyperbaric oxygen therapy in patients with delayed neuropsychiatric syndrome caused by carbon monoxide inhalation.

Lo CP, Chen SY, Chou MC, Wang CY, Lee KW, Hsueh CJ, Chen CY, Huang KL, Huang GS.

Department of Radiology, Tri-Service General Hospital and National Defense Medical Center, Taipei, Taiwan, China. rain2343@ms22.hinet.net

The purpose of this study is to assess the efficacy of hyperbaric oxygen therapy (HBOT) in patients with delayed neuropsychiatric syndrome (DNS) caused by carbon monoxide (CO) inhalation using diffusion tensor magnetic resonance (MR) imaging and neuropsychological test. Conventional and diffusion tensor brain MR imaging exams were performed in six patients with DNS immediately before and 3 months after the HBOT to obtain fractional anisotropy (FA) values. Six age- and sex-matched normal control subjects also received MR exams for comparison. Mini-Mental State Examination (MMSE) was also performed in patients immediately before and 3 months after the HBOT. A significantly higher mean FA value was found in control subjects as compared with the patients both before and 3 months after the HBOT (P < 0.001). The mean FA value 3 months after the HBOT was also significantly higher than that before the HBOT in the patient group (P < 0.001). All of the patients regained full scores in the MMSE 3 months after the HBOT. Diffusion tensor MR imaging can be a quantitative method for the assessment of the white matter change and monitor the treatment response in patients of CO-induced DNS with a good clinical correlation. HBO may be an effective therapy for DNS.