

Cerebral perfusion changes in traumatic diffuse brain injury; IMP SPECT studies

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Diffuse brain injury (DBI) is characterized by axonal degeneration and neuronal damage which cause diffuse brain atrophy. We have investigated the time course of abnormalities in cerebral perfusion distribution in cases of DBI by using Iodine-123-IMP SPECT, and the relationship to the appearance of diffuse brain atrophy. SPECT scans were performed on eight patients with diffuse brain injury due to closed cranial trauma in acute and chronic stages. All patients showed abnormalities in cerebral perfusion with decreases in perfusion, even in non-depicted regions on MRI, and the affected areas varied throughout the period of observation. Diffuse brain atrophy appeared in all patients. In some patients, diffuse brain atrophy was observed at or just after the time when the maximum number of lesions on SPECT were seen. The abnormalities in cerebral perfusion in cases of DBI might therefore be related to axonal degeneration and neuronal damage which causes diffuse brain atrophy.

Key words: diffuse brain injury, cerebral perfusion, brain atrophy, IMP, SPECT