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On the pulsatile nature of intracranial and spinal CSF-circulation demonstrated by MR imaging.

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Abstract

Cerebrospinal fluid (CSF) flow was studied in 24 healthy volunteers using gated MR phase imaging. The subarachnoid space (SAS) was divided into 5 compartments depending on the magnitude of the pulsatile CSF flows: a high velocity compartment in the area of the brain stem and spinal cord, 2 slow ones at the upper and lower extremes of the SAS, and finally 2 intermediate velocity compartments in between. The main pulsatile spinal flow channel had a meandering pattern. The extraventricular CSF-circulation can be explained by pulsatile CSF flow without the necessity of assuming existence of a net flow. A successive time offset during the cardiac cycle has been found in the fronto-occipital direction of the interplay between the arterial expansion, brain expansion, volume changes of the CSF spaces and of the veins. It is proposed to name this time offset the intracranial "volume wave" (VoW).

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Publication type, MeSH terms

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