

Brain perfusion

Brain perfusion is essential for life since the brain has a high metabolic demand. By means of **cerebrovascular autoregulation** the body is able to deliver sufficient blood containing oxygen and nutrients to the brain tissue for this metabolic need, and remove CO₂ and other waste products.

However, due to the important influences of arterial **carbon dioxide** levels, **cerebral metabolic rate**, neural activation, activity of the sympathetic nervous system, posture, as well as other physiological variables, cerebral autoregulation is often interpreted as encompassing the wider field of cerebral blood flow regulation. This field includes areas such as CO₂ reactivity, neurovascular coupling and other aspects of cerebral haemodynamics.

Brain **perfusion** in **head trauma** patients has been imaged using different techniques, including stable **Xenon CT** ¹⁾ ²⁾ and **single photon emission computed tomography** (SPECT)

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Adelson PD, Clyde B, Kochanek PM, Wisniewski SR, Marion DW, Yonas H. Cerebrovascular response in infants and young children following severe traumatic brain injury: a preliminary report. *Pediatr Neurosurg* 1997; 26: 200-7.

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Verweij BH, Muizelaar JP, Vinas FC. Hyperacute measurement of intracranial pressure, cerebral perfusion pressure, jugular venous oxygen saturation, and laser Doppler flowmetry, before and during removal of traumatic acute subdural hematoma. *J Neurosurg* 2001; 95: 569-72

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