Foramen of Monro

- Altered epithelial development of the lateral ventricle choroid plexus in Mllt11 mutants
- Fluid dynamics model of the cerebral ventricular system
- Feeding regime synchronizes circadian clock in choroid plexus - insight into a complex mechanism
- Endoscopic assessment of ventricular anomalies diagnosed by MRI in hydrocephalus associated with myelomeningocele
- Aging induces T cells with distinct transcriptomic profiles and functions in brain-associated tissues
- Deformation of brain in normal pressure hydrocephalus is more readily associated with slow vasomotion rather than heartbeat related pulsations of intracranial pressure
- Bedside Sonographic Ventricular Monitoring Through a Sonolucent Cranial Implant for Weaning of External Ventricular Drain After Aneurysmal Subarachnoid Hemorrhage
- In Preclinical Epilepsy, GLUT1 and GFAP Dysregulation in Cells Surrounding the Third Ventricle, Including Tanycytes, Is Differentially Restored with Ketogenic Diet Treatment

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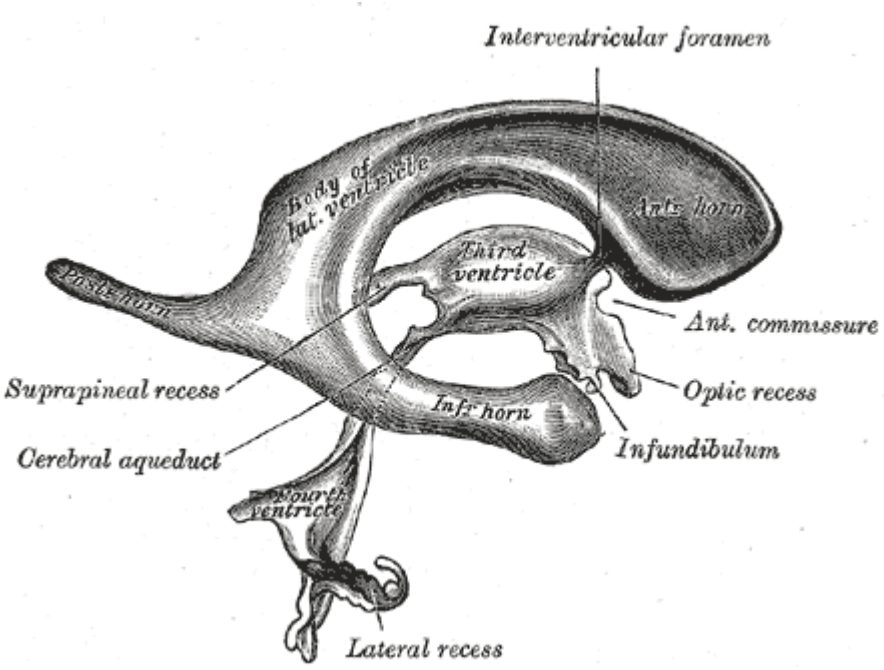

The Foramen of Monro was named after the Scottish physician Alexander Monro (1733-1817), who first described it in 1783 [1].

The interventricular foramina (or foramina of Monro) are channels that connect the paired lateral ventricles with the third ventricle at the midline of the brain. As channels, they allow cerebrospinal fluid (CSF) produced in the lateral ventricles to reach the third ventricle and then the rest of the brain's ventricular system. They also contain choroid plexus

Landmarks

At the cranial surface, the foramen of Monro is roughly 2 cm superior to the pterion, just behind the lower third of the coronal suture. At the cerebral surface, the foramen is located deep to the central portion of the pars opercularis. At the insular level, it is located deep to the central part of the second short insular gyrus. The thalamus is located at the center of the brain with the foramen of Monro at one end and the pineal gland at the other. Together, the surface landmarks of the foramen of Monro and pineal gland estimate the deep position of both the thalamus and third ventricle. The foramen of Monro approximates the anterosuperior thalamic margin, and the pineal gland defines its posterior edge.

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https://www.researchgate.net/publication/261567479/figure/fig6/AS:272641332346883@1442014167088/Figure-1-Endoscopic-view-of-the-foramen-of-Monro-a-b-obtained-with-a-rigid-endoscope.png

The interventricular foramen may be congenitally malformed, or may have become obstructed by infection, hemorrhage, or rarely tumor, which may impair the drainage of cerebrospinal fluid, and thus accumulation in the ventricles. This diagnosis is generally found in routine fetal anomaly scans at 18–22 weeks gestation. It is one of the more common abnormal brain findings on prenatal ultrasound, occurring in around 1–2 per 1000 pregnancies.

The interhemispheric transcallosal approach allows access to the third ventricle through the foramen of Monro with minimal brain retraction.

Unilateral dilatation of the lateral ventricle is a rare condition. The most common causes are tumors of the lateral ventricles or in the area of the third ventricle, acute or chronic inflammatory gliosis, cysticercosis or congenital atresia of the foramen of Monro. They report a case of asymmetrical dilatation of the lateral ventricle in an adult patient presenting with intracranial hypertension e caused by narrowing of the foramen of Monro which was occluded by a thin membrane. The patient underwent successful endoscopic fenestration of the Foramen of Monro [2].

Subependymal giant cell astrocytoma is a benign intraventricular tumor, usually located near the foramen of Monro [3].

1)
Clarke E. The Human Brain and Spinal Cord. Norman Publishing. (1996) ISBN:0930405250.
2)
Javier-Fernández J, García-Cosamalón PJ, Viñuela J, Ibañez FJ, Mostaza A, Heres S, Ortega F. [Endoscopic fenestration as a treatment for asymmetrical hydrocephalus due to obstruction of the foramen of Monro]. Neurocirugia (Astur). 2001 Dec;12(6):513-5; discussion 516. Spanish. PubMed PMID: 11787400.
3)
Baskin HJ., Jr The pathogenesis and imaging of the tuberous sclerosis complex. Pediatr Radiol 2008;38:936–952