

Intraventricular hemorrhage etiology

- Risk factors for the development of hydrocephalus in traumatic brain injury: a systematic review and meta-analysis
 - Congenital cytomegalovirus infection and brain injury in a newborn following maternal non-primary infection: case report of an unexpected diagnosis
 - Outcomes Truncated by Death in RCTs: A Simulation Study on the Survivor Average Causal Effect
 - Outcome-associated factors in a molecularly defined cohort of central neurocytoma
 - Pediatric midbrain tectal glioneuronal tumor with intratumoral hemorrhage: a case report and literature review
 - Complications in hospitalized neonates born to mothers with HDP subtypes: a retrospective cohort study and mediation analysis
 - Intraventricular flow visualization study in continuous aortic valve closure during axial flow pump support
 - Characteristics of neonatal necrotizing enterocolitis in relation to the presence or absence of patent ductus arteriosus
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1. Most occur as a result of the extension of [intraparenchymal hemorrhages](#)

a) in the adult:

- [spontaneous intracerebral hemorrhage](#): especially [thalamic hemorrhage](#) or [putaminal hemorrhage](#).
- associated with [arteriovenous malformation](#).

b) in newborns: extension of [subependymal hemorrhage](#) ([Periventricular-intraventricular hemorrhage](#))

2. pure [intraventricular hemorrhage](#) (IVH) is usually the result of a rupture of

a) [aneurysm](#): accounts for $\approx 25\%$ of IVH in adults, and is second only to extension of intracerebral hemorrhage as the most common cause. IVH occurs in 13–28% of [ruptured aneurysms](#) in clinical series ¹⁾. More common with the following aneurysms: a-comm, distal basilar artery or carotid terminus, VA or distal PICA (for patterns)

b) [vertebral artery dissection](#) (or dissecting aneurysms)

c) [intraventricular arteriovenous malformation](#)

d) [intraventricular tumor](#)

e) [SAH](#) outside the ventricles refluxing into foramina of Luschka and/or Magendie

[Chyloma](#)-induced [intraventricular hemorrhage](#) ²⁾

While intraventricular hemorrhage is frequently found in association with intraparenchymal or subarachnoid hemorrhage, isolated intraventricular hemorrhage (iIVH) is rare in adults and seldom described. Awareness of possible causes is important in order to guide patient management. After elimination of a traumatic cause, numerous aetiologies remain possible. The most frequently found underlying lesions are arteriovenous malformations and aneurysms, but other vascular causes should also be sought, including cavernous malformations and moyamoya disease. Arterial hypertension, anticoagulant use, coagulopathies and certain toxic substances are also associated with iIVH. Finally, iIVH may be caused by intraventricular tumours. In a high number of cases, the cause remains unknown. Vascular and non-vascular causes should be searched through an imaging work-up (with CT angiography, MRI and catheter angiography when necessary) and correlation with clinical information to yield a diagnosis ³⁾.

Intraventricular arteriovenous malformation

Intraventricular arteriovenous malformation

1)
Mohr G, Ferguson G, Khan M, et al. Intraventricular Hemorrhage from Ruptured Aneurysm: Retrospective Analysis of 91 Cases. J Neurosurg. 1983; 58:482-487

2)
Sun J, Zhao J, Zheng J, Zhou C. [Clinical study of stereotactic technology in the treatment of chyloma-induced intraventricular hemorrhage](#). Panminerva Med. 2024 Feb 2. doi: 10.23736/S0031-0808.24.05103-6. Epub ahead of print. PMID: 38305010.

3)
Barnaure I, Liberato AC, Gonzalez RG, Romero JM. Isolated intraventricular haemorrhage in adults. Br J Radiol. 2017 Jan;90(1069):20160779. doi: 10.1259/bjr.20160779. Review. PubMed PMID: 27805421.

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Last update: **2024/06/07 02:53**

