Hydromyelia

The term can refer to dilatation of the persistent central canal of the spinal cord which communicates with the fourth ventricle (cavity wall is lined by ependyma).

simple dilatation of the central canal with ependymal cell lining has sometimes been called hydromyelia, but this usage is ambiguous.

It is similar to, but quite distinct from syringomyelia where there is dissection through the ependymal lining of the central canal.

It is very difficult to distinguish hydromyelia from syringomyelia and hence the collective terms syringohydromyelia or simply “syrinx” are sometimes used to refer to a fluid collection within the cord.

Hydromyelia probably doesn’t occur in Chiari type 1 deformity.

Patients with syringohydromyelia without hindbrain herniation that responded to p-fossa decompression have been described (so-called “Chiari zero malformation”). Conversely, 14% of patients with tonsillar herniation > 5 mm are asymptomatic (the average extent of ectopia in this group was 11.4 ± 4.86 mm). Potentially more significant than the absolute tonsillar descent is the amount of compression of the brainstem at the FM, best appreciated on axial T2WI MRI through the FM. Complete obliteration of CSF signal and compression of the brainstem at the FM by impacted tonsils is a common significant finding.

Subependymal basement membrane destruction, blood cell accumulation on it, ependymal cell desquamation, increased cerebrospinal fluid (CSF) secretion, and increased ICP in the central channel causes hydromyelia. When these pathological changes are chronically apparent, they may reflect on CSF pathways and cause permanent subarachnoid hemorrhage-induced hydrocephalus. Preventing long-time SAH-induced hydromyelia is believed to reduce the high rate of treatment-requiring subarachnoid hemorrhage-induced hydrocephalus [1)].

1)
Abdallah A. Association between subarachnoid hemorrhage-induced hydrocephalus and hydromyelia: pathophysiological changes developed in an experimental model. Neurol Res. 2022 Sep 4:1-8. doi: 10.1080/01616412.2022.2119022. Epub ahead of print. PMID: 36062543.