Shunt-dependent hydrocephalus risk factors

- Post-traumatic hydrocephalus after decompressive craniectomy: a multidimensional analysis of clinical, radiological, and surgical risk factors
- Serum uric acid is associated with shunt dependent hydrocephalus of aneurysmal subarachnoid hemorrhage patients
- Chronic, Shunt-Dependent Hydrocephalus in Aneurysmal Subarachnoid Hemorrhage: Incidence, Risk Factors, Clinical Phenotypes, and Outcome
- Microsurgical clipping remains a viable option for the treatment of coilable ruptured middle cerebral artery aneurysms in the endovascular era
- Letter To Editor: Risk factors of shunt-dependent hydrocephalus after subarachnoid hemorrhage: a systematic review and meta-analysis based on observational cohort studies
- Endovascular treatment of ruptured basilar artery trunk aneurysms: complications and long-term outcomes
- Risk factors of shunt-dependent hydrocephalus after subarachnoid hemorrhage: a systematic review and meta-analysis based on observational cohort studies
- Unlocking the Battle-Clipping vs. Endovascular Therapy for Shunt-Dependent Hydrocephalus After Aneurysm Rupture: An In-Depth Institutional Analysis

---

Patients with intracranial aneurysms treated in from January 2014 to October 2018 were included in the study. Patients' age, gender, history of hypertension and diabetes, location of aneurysms, Glasgow coma scale (GCS) score, Hunt-Hess grading, intraventricular hemorrhage, therapeutic option, shunt placement, clinical outcome, length of stay were analyzed. The follow-up period was 1 to 5 years. Statistics included Chi-squared, Student t-test, 1-way analysis of variance, Pearson correlation coefficient, and multivariate logistic regression. About 845 cases with intracranial aneurysms treated in our department were included in the study. The mean age was 52.19 ± 9.51 years and the sex ratio was 317/528. About 14.3% (121/845) of the patients developed shunt-dependent hydrocephalus in the follow-up period. According to our results, older than 60, Hunt-Hess grading, GCS, coma, posterior circulation aneurysm, external ventricular drainage, and decompress craniotomy were risk factors of shunt dependency ($P < .05$). Moreover, older than 60, GCS 3 to 8, Hunt-Hess 3 to 5, and posterior circulation aneurysm were the independent risk factors of shunt dependency. Moreover, shunt dependency was related to a longer hospital stay and unfavorable outcome ($P < .05$). In conclusion, patients older than 60, GCS 3 to 8, Hunt-Hess 3 to 5, and posterior circulation aneurysm need more strict observation and longer follow-up. Timely and appropriate treatment may benefit patients in recovery, while further exploration is still needed in the future [1].

Shunt-dependent hydrocephalus after aneurysmal subarachnoid hemorrhage

Shunt-dependent hydrocephalus after aneurysmal subarachnoid hemorrhage.

Decompressive craniectomy

Shunt-dependent hydrocephalus after decompressive craniectomy.

Intraventricular hemorrhage

see Intraventricular hemorrhage complications.

Systematic reviews

Chen et al. conducted a systematic review based on the Meta-analysis of Observational Studies in Epidemiology (MOOSE) guidelines. They searched electronic databases including Pubmed, Embase, and Cochrane databases from 1980 through August 2019 for studies on the risk factors of SDHC after aSAH. Inclusion criteria were: (1) SAH and hydrocephalus confirmed by CT or magnetic resonance imaging findings; (2) the odds ratios (ORs) or the relative risk (RR) with 95% confidence interval (95%CI; or crude data that allowed their calculation) were reported; and (3) languages were restricted to English and Chinese. Two independent authors collected the data including study design, characteristics of patients and potential risk factors. Random-effects models were used to estimate weighted mean differences (WMD), relative risks (RR) with corresponding 95% confidence intervals (CI). For analysis with significant heterogeneity, subgroup analyses stratified by study design and geographic area were performed. In all, 37 cohort studies met inclusion criteria. Several factors were associated with SDHC. Infection, acute hydrocephalus, placement of external ventricular drainage, older age, higher Hunt and Hess grade, intraventricular hemorrhage, rebleeding, and mechanical ventilation were associated with greater 2-fold increased risk of SDHC. Vasospasm, female gender, high Fisher grade, preexisting hypertension, aneurysm in posterior location and intracerebral hemorrhage were associated with less than 2-fold increased risk. Treatment modality and diabetes mellitus were not associated with SDHC. SDHC is a multi-factorial disease that is associated with patient and treatment factors. Acknowledgement of these potential factors could help prevent SDHC [2)]

References

[1)]
Hao X, Wei D. The risk factors of shunt-dependent hydrocephalus after subarachnoid space hemorrhage of intracranial aneurysms. Medicine (Baltimore). 2019 Jul;98(27):e15970. doi: 10.1097/MD.0000000000015970. PMID: 31277089; PMCID: PMC6635240.

[2)]
Chen L, Meng Y, Xue Q, Zhao Y, Zhou X, Hu K, He H. Risk factors of shunt-dependent hydrocephalus after subarachnoid hemorrhage: a systematic review and meta-analysis based on observational cohort studies. Neurosurg Rev. 2024 Aug 13;47(1):421. doi: 10.1007/s10143-024-02589-5. PMID: 39134896; PMCID: PMC11319414.