

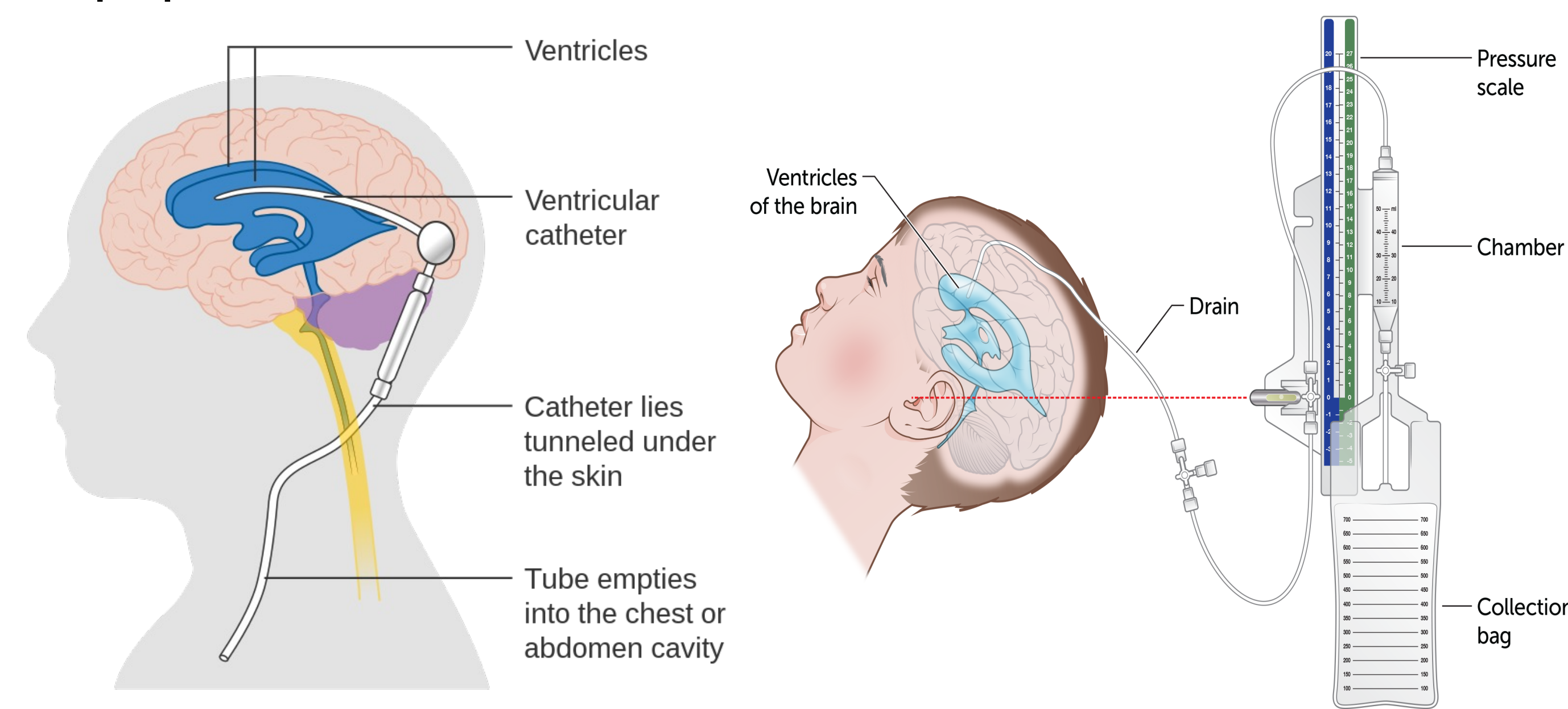
# Risk Factors, Indications, and Efficacy of Cerebrospinal Fluid (CSF) Diversion for Patients with High Grade Glioma (HGG)-Associated Hydrocephalus

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## BACKGROUND

- HGG is a class of primary brain tumors
- HGG patients typically suffer from hydrocephalus (HCP)
- CSF diversion is a part of the standard of care for hydrocephalus, but its role within this patient population remains unclear



## STUDY OBJECTIVE

- To determine the risk factors, indications, and efficacy of CSF diversion for adult patients with high-grade glioma-associated hydrocephalus

## METHODS

- Study Design
  - Systematic Review
- Setting
  - January 2000 - August 2022
- Papers/Studies
  - **Inclusion**
    - Minimum of 5 patients
    - Adult ( $\geq 18$  y. o) HGG patients with hydrocephalus
  - Data Collection
    - Quantitative Analysis
    - Qualitative Analysis using Newcastle-Ottawa Scale
  - Main Outcomes/Factors
    - Risk factors, Indications, Pre- and Post-Diversion Karnofsky Performance Status (KPS), Symptomatic Improvement, Post-Diversion survival
  - Statistical Analysis
    - Meta-Analysis

## RESULTS

**Table 1.** Presenting symptoms of high-grade glioma patients with hydrocephalus

Symptoms	No. of patients	% of patients
Headache	79	31.9%
Gait Disturbance	87	35.1%
Cognitive Decline	110	44.4%

**Table 2.** Risk factors for hydrocephalus in high-grade glioma patients who underwent CSF diversion

Risk Factor (RF)	Pts w/ RF who have HCP (%)	Pts w/o RF who have HCP (%)	HCP pts who have RF (%)	Risk Ratio
Ventricular Opening	13%	0.60%	90%	21

**Table 3.** Clinical outcomes for high-grade glioma patients with hydrocephalus who underwent CSF diversion

Symptomatic Improvement (%)	79.26
Average Post-Diversion KPS Score	50
Average Post-Diversion KPS Score	63
Average Median Post-Diversion Survival (months)	4.7

## CONCLUSIONS

- CSF diversion is an uncommon but effective treatment for HGG associated hydrocephalus symptoms
- Ventricular opening is a major risk factor for hydrocephalus and subsequent CSF diversion
- May not significantly increase overall survival
- CSF diversion should still be considered in the context of palliative care

## LIMITATIONS

- Potential data from other papers excluded due to indistinguishable clinical data
- Useful may have been missed/overlooked during screening

## IMPLICATIONS

- Further studies needed to compare outcomes between
  - Patients with obstructive hydrocephalus and communicating hydrocephalus
  - Types of CSF diversion: ETV vs. VP shunt vs. EVD