

# Cerebrospinal fluid cytology

Cerebrospinal fluid (CSF) examination can be used to verify the presence of primary malignancies as well as cases of [leptomeningeal carcinomatosis](#). Because of its importance, there have been several studies concerning the sensitivity of CSF [cytology](#).

Current methods for detection of [leptomeningeal disease](#) is the combined use of cranio-spinal [MRI](#), and [cerebrospinal fluid cytology](#) from a post-operative [lumbar puncture](#). Low et al., hypothesized that CSF taken at the start of surgery, either from an external ventricular drain or [neuroendoscope](#) will have equal sensitivity for positive tumour cells, in comparison to [lumbar puncture](#). Secondary hypotheses include positive correlation between CSF cytology and MRI findings of LMD. From a clinical perspective, the key aim of the study was for affected paediatric patients to avoid an additional procedure of a lumbar puncture, often performed under anaesthesia after neurosurgical intervention.

This is single-institution, retrospective study of paediatric patients diagnosed with [malignant](#) brain tumours. Its main aim was to compare cytological data from CSF collected at the time of surgery versus data from an interval lumbar puncture. In addition, MRI imaging of the same cohort of patients was examined for leptomeningeal disease and corroborated against CSF tumour cytology findings.

Thirty patients are recruited for this study. Data analysis demonstrates a statistically significant association between the intra-operative CSF and LP sampling. Furthermore, this results also show for significant correlation between evidence of leptomeningeal disease on MRI findings versus intra-operative CSF positivity for tumour cells.

Although this is a retrospective study with a limited population, the data concurs with potential to avoid an additional procedure for the [pediatric patient](#) diagnosed with a malignant [brain tumor](#) <sup>1)</sup>.

---

385 CSF cytology samples from 42 patients were collected from ventricular catheter and reservoir. CSF cytology of all patients was examined more than two times with immunocytochemistry for cytokeratin.

Primary neoplastic sites and histologic types of patients' metastatic cancer were diverse. The overall sensitivity for detecting malignancy was 41.3%. Even within short-term intervals, diagnoses frequently changed.

The results were inconsistent, with low sensitivity, when compared to the results of previous studies. However, CSF evaluation can still provide valuable diagnostic and prognostic information because adjuvant treatments are now routinely performed in patients with CNS metastasis. Negative CSF cytology results should not be ignored, and continuous CSF follow-up is essential for following the clinical course of patients with metastatic cancer involving the CNS <sup>2)</sup>.

<sup>1)</sup>

Low SYY, Wei CM, Chang KTE, Huak CY, Ping NL, Tew SW, Low DCY. Intra-operative cerebrospinal fluid sampling versus post-operative lumbar puncture for detection of leptomeningeal disease in malignant paediatric brain tumours. PLoS One. 2018 May 3;13(5):e0196696. doi: 10.1371/journal.pone.0196696. eCollection 2018. PubMed PMID: 29723241.

<sup>2)</sup>

Bae YS, Cheong JW, Chang WS, Kim S, Oh EJ, Kim SH. Diagnostic Accuracy of Cerebrospinal Fluid (CSF) Cytology in Metastatic Tumors: An Analysis of Consecutive CSF Samples. Korean J Pathol. 2013

Dec;47(6):563-8. doi: 10.4132/KoreanJPathol.2013.47.6.563. Epub 2013 Dec 24. PubMed PMID: 24421850.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

[https://neurosurgerywiki.com/wiki/doku.php?id=cerebrospinal\\_fluid\\_cytology](https://neurosurgerywiki.com/wiki/doku.php?id=cerebrospinal_fluid_cytology)

Last update: **2024/06/07 02:51**

