Cytologic features during intraoperative assessment of central neurocytoma: a report of three cases and review of the literature.

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Abstract

BACKGROUND: Central neurocytomas (CNs) are infrequent intraventricular tumors with features of neuronal differentiation that affect young adults and have an excellent prognosis after total resection. The main differential intraoperative diagnoses are oligodendrogliomas, ependymomas and non-Hodgkin's lymphomas; therefore, an accurate and precise intraoperative diagnosis is essential, making the cytologic features the hallmark for cytopathologists, surgical pathologists and neurosurgeons alike. Seven previous reports have described 18 cases of CNs and have addressed the cytodiagnostic criteria during intraoperative assessment in the English medical literature.

CASES: Three patients (23 years old/male, 29 years old/female and 28 years old/male) were evaluated during intraoperative assessment as CNs. They showed intraventricular tumors that measured 6.5, 3.5 and 6.6 cm, respectively. The cytologic features common in these cases were: (1) monotonous or isomorphic round cells, (2) small nuclei with stippled or granular chromatin, and (3) acellular fibrillary areas or neuropil (islands). Other cytologic features often encountered were: rosette-like structures, micronucleoli, perinuclear haloes, well-formed capillary-sized vessels and calcifications.

CONCLUSION: Differential diagnosis of CNs can be a diagnostic challenge. The integration of radiologic imaging and touch preparations taking into account specific cytologic features and frozen sections is necessary for an optimal intraoperative assessment.

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