Pineal region tumor in children

Case series

2016

A paper reviews the outcomes of 29 children treated for pineal region tumor and posterior third ventricle tumors in the contemporary era using chemotherapy, radiotherapy, and resection as defined by the histology and/or marker profile of the tumor.

At the time of diagnosis, all patients except 1 had hydrocephalus and all had ophthalmological involvement. Papilledema was found in 69% of patients. Seventy-five percent of patients had partial or complete Parinaud syndrome, and diplopia or blurred vision was noted in the remaining patients. Visual acuity was impaired in 8 patients. Outcomes were dependent on the histology of the tumor and the treatment required. Those patients who did not requiring resection showed a lower rate of ophthalmological worsening during treatment and greater long-term improvement, in particular with respect to up-gaze palsy. Patients who underwent resection for postchemotherapy residual disease or primary resection showed greater worsening during treatment and lesser degrees of recovery. All patients with impaired visual acuity improved with treatment.

As the mortality of germ cell and other pineal tumors decreases, posttreatment morbidity remains, specifically that related to convergence nystagmus, accommodation, and diplopia. In addition to survival, ophthalmological morbidity should be reported in studies concerning the outcomes of treatment for pineal neoplasms [1].

1988

Edwards et al. published a retrospective review of the presentation, treatment, and outcome of 36 children under the age of 18 years treated between 1974 and 1986. Eleven children had germinomas (two-cell type), seven had astrocytomas, and the remaining 18 had 15 histologically different tumor types. Surgery was performed on 30 patients; there were no deaths, but a 10% rate of persistent morbidity was found. The median follow-up period was 4 years. Nine (82%) of 11 patients with germinomas are alive without evidence of recurrence; one child died from recurrent tumor in the pineal region and another is presently being treated for recurrent tumor of the spinal cord. Six (86%) of the seven patients with astrocytoma are well after biopsy and radiation therapy. Of the remaining 18 children, five (28%) died from tumor progression. The cerebrospinal fluid (CSF) tumor markers alpha feto protein and beta-human chorionic gonadotropin were helpful in determining the presence of malignant germ-cell tumors, particularly those with a poor prognosis. Magnetic resonance imaging was useful for diagnosis and for planning the operative approach. Magnetic resonance images showed the presence of pineal region tumors in four children with hydrocephalus who had no evidence of tumor on computerized tomography scans. Because the great variety of tumor types found in the pineal region must be treated in different ways and because improved microsurgical and stereotaxic surgical techniques have made mortality and morbidity rates acceptably low, a biopsy diagnosis should be obtained in all patients. Preoperative assessment of CSF tumor markers and cytology is useful for the identification of patients who have a poor prognosis [2].

1)

Hankinson EV, Lyons CJ, Hukin J, Cochrane DD. Ophthalmological outcomes of patients treated for

pineal region tumors. J Neurosurg Pediatr. 2016 May;17(5):558-63. doi: 10.3171/2015.10.PEDS15415. Epub 2016 Jan 22. PubMed PMID: 26799411.

2)

Edwards MS, Hudgins RJ, Wilson CB, Levin VA, Wara WM. Pineal region tumors in children. J Neurosurg. 1988 May;68(5):689-97. PubMed PMID: 2451717.