Thalamic pilocytic astrocytoma case series

2019

El Ahmadieh et al., reported two young adult patients with histone H3K27 mutation in thalamic pilocytic astrocytomas who presented to medical attention with symptomatic hydrocephalus requiring urgent intervention.

They presented the experience with this unusual tumor and recommend a treatment paradigm of maximal safe surgical resection followed by chemotherapy and radiation.

Stereotactic biopsies may undergrade some adult thalamic pilocytic astrocytomas. El Ahmadieh et al. recommended that all of these tumors be evaluated for the H3K27M mutation. Further, they believe that H3 K27M-mutant thalamic pilocytic astrocytomas require aggressive multi-modality treatment and that these treatments should be guided by the molecular findings, as opposed to the histologic ones [1)].

2007

Seventy-two patients with thalamic pilocytic astrocytomas underwent stereotactic volumetric resection by the senior author (PJK) at the Mayo Clinic between 1984 and 1993 (44 patients) and at New York University Medical Center between 1993 and 2005 (28 patients). Patient demographics, presenting symptoms, surgical approaches, neurological outcomes, pathology, initial postoperative status, and long-term clinical and radiographic follow-up were retrospectively reviewed.

On preoperative neurological examinations, 54 of the 72 patients had neurological deficits; of these, 48 had hemiparesis. Postoperative imaging demonstrated gross total resection in 58 patients and minimal (<6 mm) residual tumor in 13 patients. Tumor resection was aborted in one patient. On immediate postoperative examination, 16 patients had significant improvements in hemiparesis. Six patients had worsening of a preexisting hemiparesis and one had a new transient postoperative hemiparesis. There was one postoperative death. After 13 to 20 years of follow-up in the Mayo group (mean, 15 +/- 3 yr) and 1 to 13 years of follow-up in the New York University group (mean, 8 +/- 3 yr), 67 patients were recurrence/progression-free, one had tumor recurrence, and three had progression of residual tumor. There were two shunt-related deaths. On long-term neurological follow-up, 27 patients had significant improvements in hemiparesis; one patient with a postoperative worsening of a preexisting hemiparesis remained unchanged. There were no patients with new long-term motor deficits after stereotactic resection.

Gross total removal of thalamic pilocytic astrocytomas with low morbidity and mortality can be achieved by computer-assisted stereotactic volumetric resection techniques. Gross total resection of these lesions confers a favorable long-term prognosis without adjuvant chemotherapy and/or radiation therapy and leads to the improvement of neurological deficits [2)]

1992

Twenty-three cases of pathologically verified thalamic pilocytic astrocytomas diagnosed at computer-assisted stereotactic biopsy and/or volumetric resection at the Mayo Clinic between January 1985 and October 1990 were reviewed. Computer-assisted stereotactic volumetric resection was performed in 19 patients. Postoperative imaging demonstrated no residual contrast-enhancing tumor in 14 patients and a small amount of contrast-enhancing tumor (less than 5% of the original tumor volume) in 5 patients. Biopsy only was performed in 4 patients: 2 with primarily cystic tumors successfully treated with stereotactic instillation of 32P, and 2 patients with stable (nonprogressive) deficits. There was 1 operative death; a patient with tumor extending into the midbrain became comatose and died 10 days after surgery. The remaining 22 patients are alive and well. Computer-assisted stereotactic volumetric resection of thalamic pilocytic astrocytomas can be performed with low morbidity and a favorable long-term prognosis [3)].

1)
El Ahmadieh TY, Plitt A, Kafka B, Aoun SG, Raisanen JM, Orr B, Pan E, Wardak Z, Nedzi LA, Patel TR. H3 K27M Mutations in Thalamic Pilocytic Astrocytomas with Anaplasia. World Neurosurg. 2019 Jan 10. pii: S1878-8750(19)30015-4. doi: 10.1016/j.wneu.2018.12.147. [Epub ahead of print] PubMed PMID: 30639498.

2)
Moshel YA, Link MJ, Kelly PJ. Stereotactic volumetric resection of thalamic pilocytic astrocytomas. Neurosurgery. 2007 Jul;61(1):66-75; discussion 75. PubMed PMID: 17621020.

3)
Lyons MK, Kelly PJ. Computer-assisted stereotactic biopsy and volumetric resection of thalamic pilocytic astrocytomas. Report of 23 cases. Stereotact Funct Neurosurg. 1992;59(1-4):100-4. PubMed PMID: 1295026.