Pineal region tumor case series

122 patients with histologically confirmed PRTs and pre-operative multi-modal MR images were included. Radiomics features were extracted from different ROIs and image sequences separately. A computational framework that combines a few classification and feature selection algorithms were used to predict histology with radiomics features and demographics. We systemically benchmarked performance of models with feature matrices from all possible combinations of ROIs and image sequences. The Area under the ROC Curve (AUC) was then used to evaluate model performance.

Models with demographics and radiomics features outperform radiomics-only or demographics-only models. The best demographical-radiomics model reached the highest AUC of 0.88 (CI95%: 0.81-0.96). Through the comprehensive evaluation of possible sequence combinations in the differential diagnosis of pineal tumor, T1 and T2 emerged as the most informative sequences for the task. There is imbalanced usage of feature classes as we analyze their proportion in all models.

The demographical-radiomics model can accurately and efficiently identify germinomas in the pineal region. The preference for MRI sequences, radiomics feature classes, features selection and classification algorithms provide a valuable reference for future attempts at developing classifiers on medical images [1)].

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80 patients with pineal region tumors were selected as the retrospective research objects and divided into the control group and the treatment group, with 40 cases in each group, according to the random number table method. The control group was treated using the endoscopic transtentorial approach (Poppen approach), while the treatment group was treated with the endoscopic supratentorial approach (Krause approach). The inflammatory factors, inflammatory stress response, postoperative neurological dysfunction, clinical efficacy, and poor prognosis were observed and compared between the two groups. Tumor resection and recurrence were used to compare the clinical outcomes of tumors in the pineal region. The extent of surgical resection was 100% higher in both groups, and the treatment group was comparable to the control group. The prognosis of patients after the operation was poor. Nausea and vomiting, visual disturbance, upper vision paralysis, and ataxia in the treatment group were significantly lower than those in the control group, with no statistical significance ($P > 0.05$). At the same time, the bone window can be reduced to reduce trauma and provide a certain reference for patients to choose a safe and complete resection method [2)]

Fifty patients were identified as having undergone surgical management of a pineal region tumor with at least 1 year of follow-up. Forty-one percent presented with a Karnofsky Performance Scale (KPS) score of 70 or less, all of whom had concomitant hydrocephalus that required urgent treatment. The following variables were statistically significant to KPS score on admission: age, tumor volume, preoperative hydrocephalus, length of hospitalization (total and intensive care unit), and elevations in serum tumor markers. The median postoperative (2 months) KPS score was 90. The following variables were statistically significant with respect to change in KPS score postoperatively: tumor maximum diameter, KPS score on admission, and intensive care unit length of stay. The specific surgical strategy did not correlate to extent of tumor resection, morbidity, immediate neurological outcome, and progression-free survival.

Extent of resection, neurological outcome, and progression-free survival in the patients in our series

were not related to the specific surgical approach employed and its perioperative complications [3].

The ophthalmological outcomes of children treated for pineal tumors have received limited attention in the literature. A paper reviews the outcomes of 29 children treated for pineal and posterior third ventricular 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's 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 tumor 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 [4].

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