

Surgical Outcomes in Pediatric Pituitary Adenoma

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Introduction

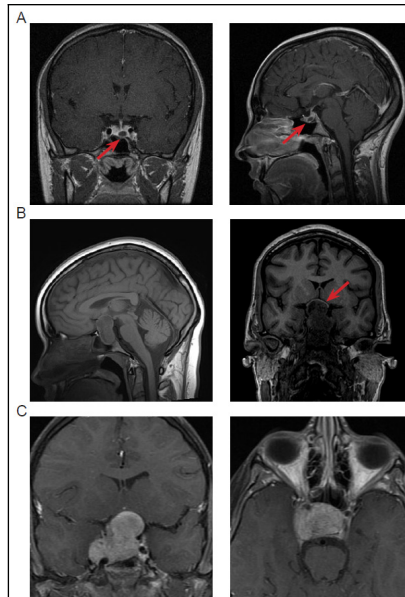
Pituitary adenomas are very uncommon in children, representing 3% of all pediatric intracranial neoplasms, and approximately 5% of all pituitary adenomas. Secreting tumors predominate, and longer disease trajectories are expected due to the patient age, cumulatively resulting in a natural history and treatment paradigm that are highly complex and often debated. We describe a large, single-institution series of pediatric pituitary adenomas, with extensive long-term follow-up.

Methods

The study cohort was compiled by searching institutional pathology and operative reports using diagnosis and site codes for pituitary and sellar pathology, from 1956-2016. Patients over 18 at diagnosis were excluded; included patients underwent retrospective chart review.

Results

Thirty-nine surgically managed pediatric pituitary adenomas were identified; median ages at times of diagnosis and surgery were 15 and 16 years, respectively (ranges 8-18; 9-22). Biochemical and pathologic analyses diagnosed 15 prolactinomas (39%), 14 corticotropinomas (36%), 7 somatotropinomas (18%), and 4 non-secreting adenomas (10%); 4 secreting tumors were plurihormonal. All patients underwent transsphenoidal resection as the initial surgical treatment (100%), with a history of failed pharmacotherapy in 13 prolactinomas. Primary surgical cure was achieved in 18 (46%); 21 experienced recurrent/persistent disease, with secondary treatments including repeat surgery in 10 (26%), radiation in 14 (36%), pharmacotherapy in 11 (28%), and bilateral adrenalectomy in 3 (21% of ACTH-secreting tumors). At last follow-up (median 87 months, range 3-581), 9 remained with recurrent/persistent disease (23%), with 0 mortalities.



A: Gadolinium-enhanced MRI with hypo-enhancing eccentric left sellar lesion, suggestive of adenoma (red arrows). B: MPRAGE MRI of a large sellar mass causing benign bony remodeling, significant superior displacement of the optic chiasm (red arrow), and internal heterogeneity, consistent with adenoma hemorrhage. C: Gadolinium-enhanced MRI demonstrates a large, vividly enhancing sellar mass with bilateral cavernous sinuses invasion, carotid encasement, and suprasellar/middle fossa extension.

Learning Objectives

1. Understand general principles of pediatric pituitary adenoma diagnosis and treatment
2. Review long-term surgical outcomes, including the elevated risk of recurrence and possible requirement for multi-modality therapy
3. Discuss differences between pediatric and adult pituitary disease

Conclusions

Pediatric pituitary adenomas are rare, diverse, and challenging tumors with complexities far beyond those encountered in the management of routine adult pituitary disease, including nuanced decision making, a technically demanding operative environment, high propensity for recurrence, and the childhood-specific risks of debilitating morbidity from endocrine complications after surgery, radiation, or both. Optimal treatment requires a high degree of individualization, and patients are most likely to benefit from consolidated, multidisciplinary care in highly experienced centers.

References

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