A 15-year Single Center Experience on the Surgical Management of Adult Intracranial Ependymomas

Elliot Pressman, MD; Samantha Schimmel; Maya Toothman; Emma Dunn; Siviero Agazzi, MD, MBA; Harry van Loveren, MD; Kunal Vakharia, MD

University of South Florida

Introduction

Adult intracranial ependymomas are rare lesions.
Most large single-center studies remain limited with case numbers and follow up.
We sought to look at a 15 year experience from our academic institution.

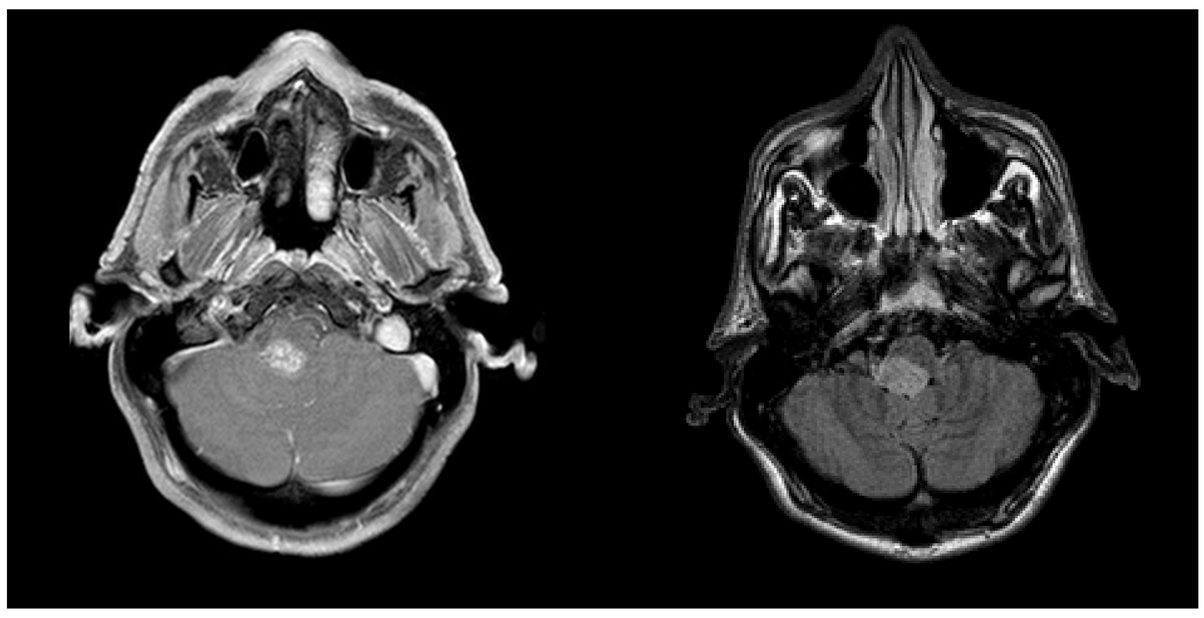
Methods and Materials

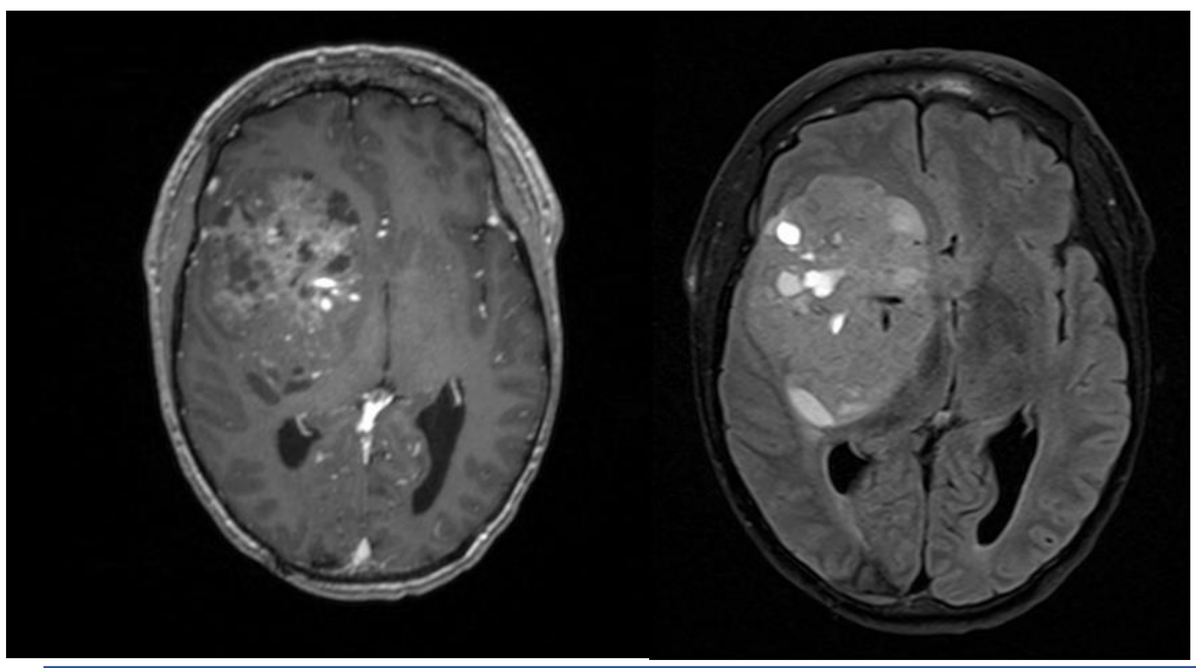
We queried the pathology department at our tertiary care center for specimens positive for ependymoma from 2009-2024
- Using natural language processing

We excluded extra-cranial locations and pathology specimens that were later changed to non-ependymoma lesions once final genomics resulted based on 2022 WHO guidelines.

We then performed a retrospective cohort study on these patients

We collected demographics, presenting symptoms, radiographic information, surgical considerations, and postoperative outcomes.





Results

Over 15 years, 18 pathology-confirmed intracranial ependymomas were resected at our institution.

22 patients were originally identified in our database though four had to be removed due to final genomic analysis ruling out ependymoma.

Median age at time of surgery was 56
10 patients (55.6%) were female

Thirteen tumors (72.2%) were infratentorial, 5 (27.8%) were supratentorial; six cases were entirely extraventricular (33.4%); 5 (27.8%) had an associated cystic component.

Median infratentorial tumor size was 5.91cm^3 (interquartile range (IQR) 4.21-18.6), median supratentorial tumor size was 25.7cm^3 (IQR 4.56-126; p=0.308).

Median duration of symptoms preoperatively was two months

Three patients (16.7%) had prior resection of their ependymomas

On presentation, seven patients (38.9%) were diagnosed with hydrocephalus, seven patients (38.9%) had cranial neuropathies (most commonly VI (N=3) and VIII (N=3), eleven patients complained of headache (61.1%), seven (38.9%) of nausea/vomiting, five (27.8%) of vertigo, ten patients (55.6%) of symptoms attributed to cerebellar dysfunction, and five patients (27.8%) had signs of weakness on physical exam.

According to operative reports, gross total resection was achieved in ten patients (55.6%) and near total in four (22.2%).

Pathology confirmed 14 cases (77.8%) were WHO grade 2 and 3 cases (16.7%) as grade 3.

Three patients (16.7%) were underwent adjuvant chemotherapy, eleven patients (61.1%) radiotherapy.

Median length of follow-up was 21 months. Three patients (16.7%) died during follow-up.

In patients with follow-up, progression free survival was a median of 42 months and overall survival was 5.5 years.

At follow-up, four patients (22.2%) had new bulbar symptoms, 60% of patients had improvement of weakness, 90% had improvement of cerebellar symptoms, 80% had improvement of vertigo.

Conclusions

Genomic analysis is essential to proper identification of ependymomas in resected adult tumors where initial pathology is suggestive of diagnosis

Resection of ependymomas despite location and size is safe though can cause a high rate of postoperative bulbar symptoms despite significant improvement in other symptoms.

Progression free survival and overall survival is reasonable with the use of adjunctive therapy when recommended.

Contact:
Elliot Pressman, USF Neurosurgery
Epressman@usf.edu