



## Survival and Prognostic Factors in Intracranial Hemangiopericytoma

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### Introduction

Intracranial hemangiopericytoma is a rare tumor and population-based survival and prognostic studies are lacking. The goal of this study was to describe survival rates and identify prognostic factors associated with survival in patients with hemangiopericytoma using a 30-year US national cancer registry (Surveillance, Epidemiology, and End Results [SEER]).

### Methods

Patients with intracranial hemangiopericytoma were queried in the SEER registry (1973–2005) based on International Classification of Disease for Oncology, Third Edition coding. Estimated Kaplan-Meier survival curves were constructed for surgery type, extent of invasion, and radiation treatment; Log-rank and Wilcoxon tests were used to assess the correlation. Proportional hazards regression analysis was used to evaluate the association between age, year of diagnosis, and survival time.

Table 1: Demographics, tumor location, treatment, and extent of invasion for patients with hemangiopericytoma from the SEER database (1978 - 2005)		
Variable	N	%
Number of patients in SEER (1978 - 2005)	147	
Age at Diagnosis (Median; in years)	49	
Male	71	48.3%
Race		
White	121	82.3%
Black	9	6.1%
Other	16	10.9%
Surgery Type		
1 = Biopsy	23	15.6%
2 = Subtotal Resection	29	19.7%
3 = Gross-total Resection	65	44.2%
Extent of Invasion Recode (?)		
Confined to Brain/Brain Stem/Meninges	49	33.3%
Local Invasion	26	17.7%
Metastasis	5	3.4%
Treatment		
Radiation	84	57.1%
No Radiation	63	42.9%

### Results

A total 147 patients with intracranial hemangiopericytoma were identified in SEER. The overall median survival was 9.9 years, with 1-year, 5-year, and 10-year survival rates of 93%, 74%, and 46%, respectively. Surgical resection was carried out in 84% and Radiation was administered to 57% of patients as part of initial treatment. Of the 117 patients with available extent of resection data, 65 (56%) underwent a gross-total resection, 29 (25%) – a subtotal resection, and 23 (20%) had a biopsy. Patients treated with gross-total resection had a median survival of 9.2 years compared to 7.1 years among those treated with subtotal resection. Of the 80 patients with extent of invasion data, 5 patients (6%) who developed extracranial metastasis had a median survival of 3 years. Increasing age in decades and earlier year of surgery were associated with decreased survival (hazard ratios: 1.29, 0.69; p-values of 0.0029 and 0.0741, respectively).

Table 2: Variables and hazard ratios associated with overall survival in patients with hemangiopericytoma from the SEER database (1978 - 2005)			
Variable	HR (95% CI)	p-value	
Age at diagnosis (in decades)	1.29 (1.1-1.5)	0.0029	
Year of surgery	0.69 (0.5-1.0)	0.0741	

### Learning Objectives

By the conclusion of the this session participants should be able to 1) describe survival rates 2) identify prognostic factors associated with survival in patients with hemangioparacytoma.

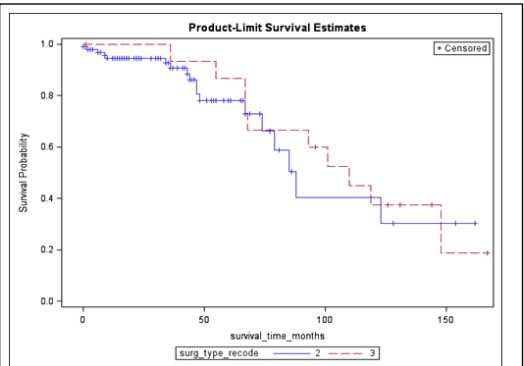


Figure 1. Survival as a function of Surgery Type. The blue line signifies subtotal resection, and the red line signifies gross-total resection.

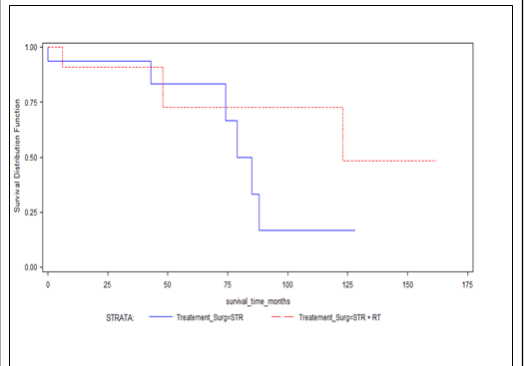


Figure 2. Survival as a function of Treatment Modality. The blue line signifies treatment with surgery plus STR, and the red line signifies treatment with surgery plus STR plus RT.

### Conclusions

Majority of patients with hemangiopericytoma are being treated with surgery and radiation as part of their initial treatment. Age and the presence of distal metastases are significant prognostic factors for survival in hemangiopericytoma.

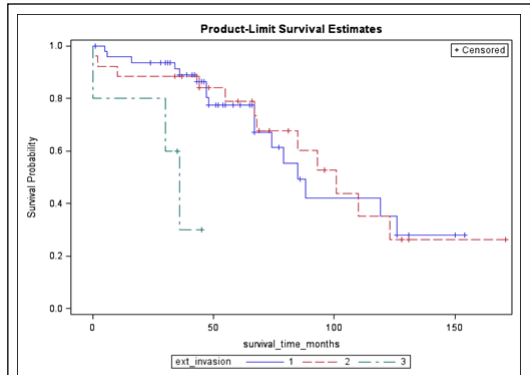


Figure 3. Survival as a function of Extent of Invasion. The blue line signifies tumor confined to the brain, brain stem, and meninges. The red line signifies local invasion of tumor. The green line signifies metastasis of tumor.

