

Introduction

Brain metastasis (BM) prognosis has improved due to advances on the systemic treatment, neurosurgical techniques and radiotherapy. Prognostic scores specific for BM were developed at least a decade ago. Our objective was to evaluate the survival of BM surgically treated and identify prognostic factors on a contemporary cohort. Perioperative morbidity and mortality were also evaluated.

Methods

Surgically treated BM prospectively followed-up at oncology center of a tertiary university hospital. Factors independently associated with 1-year survival and 12-week mortality after adjustment for the GPA score were identified through Cox regression and logistic regression models respectively. GPA variables were not considered for the multivariate models.

Results

It were included 200 patients (mean age 56.1±12.6 years, 55.0% female, 36.5% lung cancer). A 48.0% had >1 BM and 27.5% were on eloquent areas. Preoperative median KPS was 60 (quartiles 50-80) and GPA 1.5 (quartiles 1-2). Gross total resection was achieved on 89.0% and 63.0% were submitted to adjuvant radiotherapy (RDT). Infection (surgical/systemic) was the main perioperative morbidity (13.0%) and the cause of 62.5% 28-day deaths. The 12-week and 28-day mortality were 30,5% and 8,0%. Median survival was 5 months and 34.5% lived >1 year. Postoperative KPS improved to a median 80 (quartiles 60-90) (55.0% improved). After multivariate adjustment, including GPA score, RDT (OR 0.22, 95%CI 0.10-0.48,p<0.0001) and postoperative KPS (each 10-point improvement, OR 0.60, 95%CI 0.48-0.82,p<0.001) were associated with 12-week mortality. One year survival was associated with preoperative ASA (HR 1.46, 95%CI 1.11-1.92,p=0.007), left-sided (HR 1.69, 95%CI 1.05-2.72,p=0.029) or bilateral lesions (HR 2.24, 95%CI 1.40-3.56,p=0.001), RDT (HR 0.42, 95%CI 0.28-0.64,p<0.001) and postoperative KPS (each 10-point, HR 0.70, 95%CI 0.62-0.78,p<0.001).

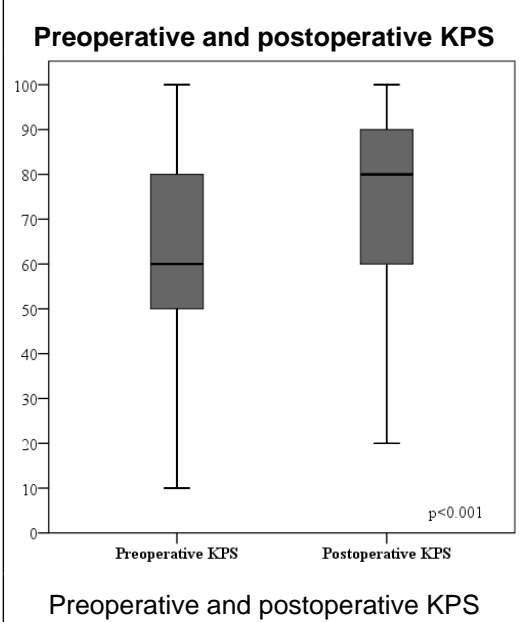
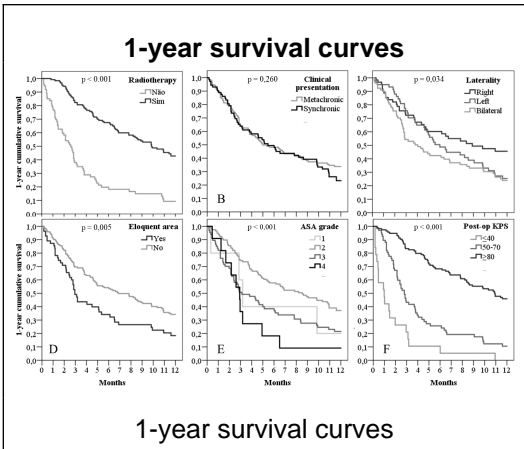


Table 4. Multivariate Analysis for predictor of death in 12 weeks and 1-year survival (n=200)

Variables	Logistic regression for predictor of death in 12 weeks					Cox regression for predictor of 1-year survival				
	Coeff (e-SD)	Wald	OR	95% CI	P-value	Coeff (e-SD)	Wald	HR	95% CI	P-value
GPA	-0.07 (0.12)	0.10	1.04	0.82-1.32	0.755	0.10 (0.12)	0.67	1.10	0.87-1.39	0.413
ASA	0.58 (0.29)	2.10	1.52	0.86-2.70	0.147	0.38 (0.14)	7.25	1.46	1.11-1.92	0.007
Eloquent brain areas	0.30 (0.46)	0.26	1.26	0.51-3.11	0.612	0.19 (0.22)	0.79	1.21	0.79-1.86	0.375
Laterality										
right	-	3.77	-	-	0.152	-	11.53	-	-	0.003
left	-0.04 (0.51)	0.19	1.25	0.46-3.41	0.665	0.53 (0.24)	4.74	1.69	1.05-2.72	0.029
both of them	0.78 (0.50)	3.36	2.49	0.84-6.61	0.070	0.80 (0.24)	11.64	2.24	1.40-3.56	0.001
Radiotherapy	-1.41 (0.40)	14.21	0.22	0.10-0.48	<0.001	-0.87 (0.22)	16.20	0.42	0.28-0.64	<0.001
Postoperative KPS	-0.46 (0.14)	12.17	0.60	0.48-0.82	<0.001	-0.36 (0.06)	36.68	0.70	0.62-0.78	<0.001
Recurrence										
NIM			NIM			-0.14 (0.20)	0.49	0.87	0.58-1.29	0.485

Coeff: coefficient, SD: standard error, CI: confidence interval, HR: hazard ratio, OR: odds ratio, GPA: Graded Prognostic Assessment, ASA: American Society of Anesthesiologists, KPS: Karnofsky Performance Status, NIM: not included in the model.

Conclusions

Adjuvant RDT and post-operative KPS, added to GPA, played a major role on 12-week and 1-year prognosis. Although morbidity and mortality remain high, functionality improved after surgical resection and more than one third lived for >1 year.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe prognostic factors for brain metastasis patients survival; 2) Discuss how brain metastasis prognosis has improved along the years.

References

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