

Laboratory parameters have a strong and independent prognostic value in patients with newly diagnosed brain metastases: analysis of 1201 cases

Anna S. Berghoff (1,2), Romina Koller (1,2),
Georg Widhalm (2,3), Karin Dieckmann (2,4),
Christoph C. Zielinski (1,2), Peter Birner (2,5),
Rupert Bartsch (1,2), Matthias Preusser (1,2)



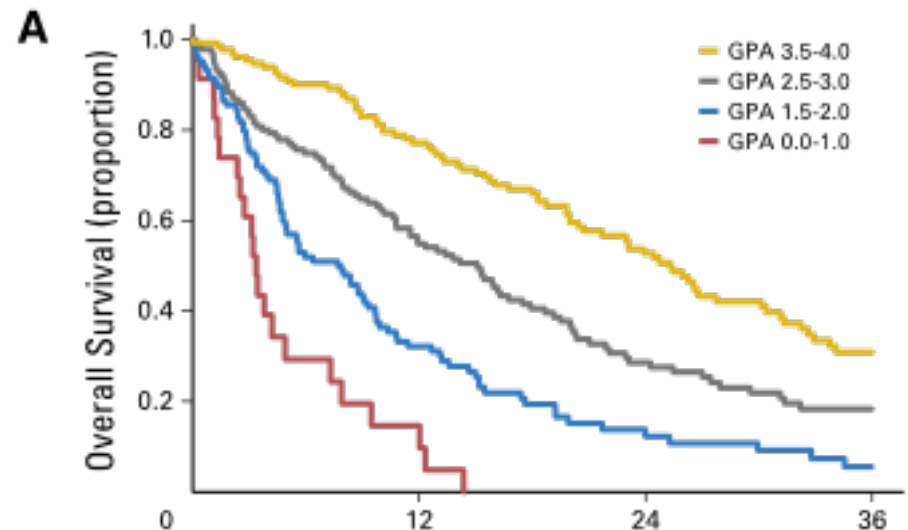
1 Department of Medicine I, Medical University of Vienna; 1090 Vienna, Austria; 2
Comprehensive Cancer Center, Medical University of Vienna; 1090 Vienna, Austria;
3 Department of Neurosurgery, Medical University of Vienna; 1090 Vienna, Austria;
4 Department of Radiotherapy, Medical University of Vienna; 1090 Vienna, Austria;
5 Department of Pathology, Medical University of Vienna; 1090 Vienna, Austria

The challenge of BM specific trials

- Diffusion – Blood Brain / Blood Tumor Barrier
- Expression of predictive biomarkers
- Patient selection – prognostic homogenous population
 - Survival prognosis based on clinical factors
 - Karnofsky performance status
 - Age
 - Number of BM
 - Extent of extracranial disease

Summary Report on the Graded Prognostic Assessment: An Accurate and Facile Diagnosis-Specific Tool to Estimate Survival for Patients With Brain Metastases

Paul W. Sperduto, Norbert Kased, David Roberge, Zhiyuan Xu, Ryan Shanley, Xianghua Luo, Penny K. Sneed, Samuel T. Chao, Robert J. Weil, John Suh, Amit Bhatt, Ashley W. Jensen, Paul D. Brown, Helen A. Shih, John Kirkpatrick, Laurie E. Gaspar, John B. Fiveash, Veronica Chiang, Jonathan P.S. Knisely, Christina Maria Sperduto, Nancy Lin, and Minesh Mehta

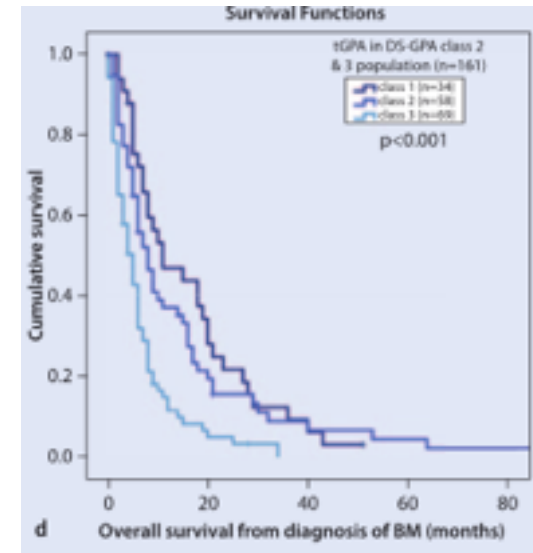
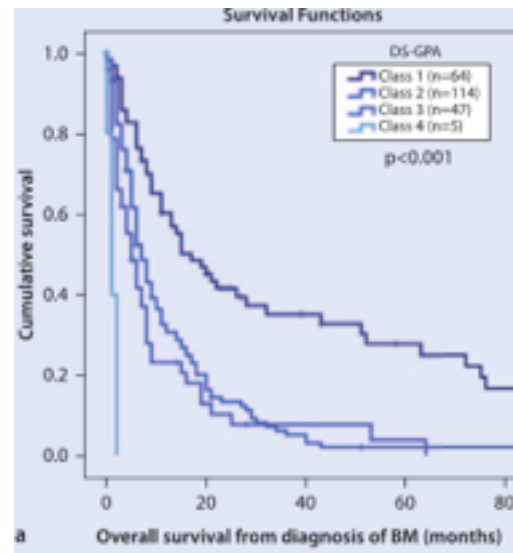


Assessing the survival prognosis in BM patients

- (DS)-GPA
 - Establishment in patients involved in clinical trials – positive selection
 - Addition of further information
 - Radiology
 - Tissue based
 - Laboratory?

Prognostic significance of Ki67 proliferation index, HIF1 alpha index and microvascular density in patients with non-small cell lung cancer brain metastases

A. S. Berghoff^{1,2,3} · A. Ilhan-Mutlu^{2,3} · A. Wöhrer^{1,2} · M. Hackl⁴ · G. Widhalm^{2,5} · J. A. Hainfellner^{1,2} · K. Dieckmann^{2,6} · T. Melchardt⁷ · B. Dome⁸ · H. Heinzl^{2,9} · P. Birner^{2,10} · M. Preusser^{2,3}



Methods

- 1201 patients treated for newly diagnosed brain metastases (BM) from solid extracranial cancers treated at the Medical University of Vienna
- Assessment of standard laboratory parameters
 - Hemoglobin
 - Platelet count
 - WBC
 - Albumin
 - Creatinine
 - LDH
 - CRP

Patients Characteristics

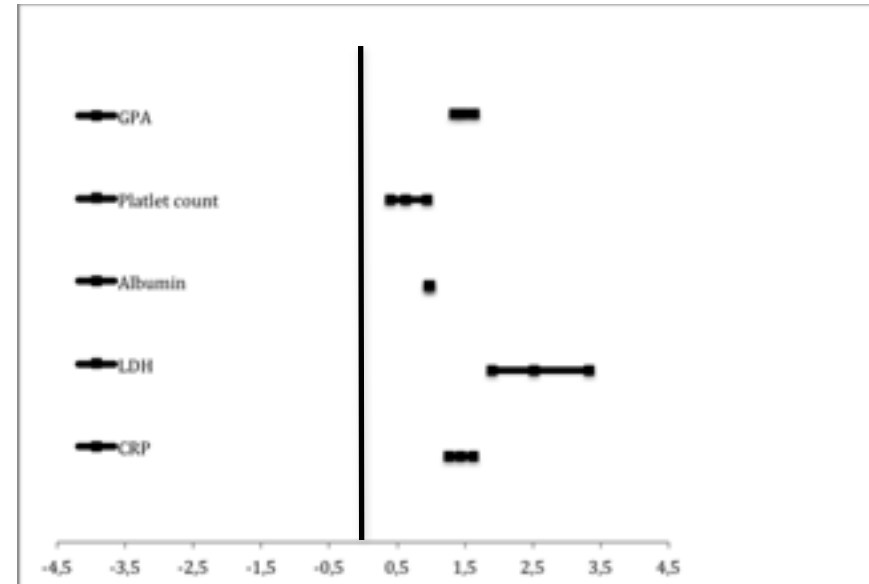
Characteristic	Entire population (n=1201)	
	n	%
Median age at diagnosis of BM, years (range)	56 (17-88)	
Sex		
Male	569	47.4
Female	632	52.6
Primary tumor		
Lung cancer	472	39.3
Breast cancer	266	22.1
Melanoma	163	13.6
Renal cell carcinoma	121	10.1
Colorectal cancer	101	8.4
Cancer of unknown primary	20	1.7
Others	58	4.8
GPA class at diagnosis of BM		
I	106	8.8
II	144	12.0
III	718	59.8
IV	233	19.4
1st line treatment for BM		
Stereotactic Surgery	437	36.4
Chemotherapy	6	0.5
Surgery	538	44.8
Whole brain radiation therapy	204	17.0
Best supportive care	16	1.3
Median overall survival from diagnosis of BM, months (range)	6 (0-207)	

Laboratory parameters prognostic value in patients with newly diagnosed brain metastases

Laboratory parameter	Median OS, months			P-value log rank
	LLN	Normal	ULN	
Hemoglobin	5	9	n.a.	<0.001
Platelet count	5	7	n.a.	0.002
WBC	5	8	7	0.008
LDH	n.a.	9	4	<0.001
Albumin	4	8	n.a.	<0.001
Creatinine	n.a.	8	6	0.057
CRP	n.a.	10	5	<0.001

Laboratory parameters prognostic value in patients with newly diagnosed brain metastases

Laboratory parameter	HR	P-value cox
Hemoglobin		
Platelet count	0.620	0.025
WBC		
LDH	2.518	<0.001
Albumin	0.975	<0.001
Creatinine		
CRP	1.439	<0.001



Conclusion

- Standard laboratory parameter have a prognostic role
- Albumin level, CRP, LDH and platelet count
=> independent prognostic impact in multivariable survival analysis including the established GPA survival prognosis score
- Inclusion of laboratory parameters in prognostic assessment
=>more narrow and accurate prognostic assessment
=>Work in progress: calculation of prognostic score including lab parameters

Acknowledgments:



SANO



COMPREHENSIVE
CANCER
CENTER VIENNA



Klinische Abteilung für Onkologie
Universitätsklinik für Innere Medizin I - AKH Wien

CLINS

Doctoral program Clinical Neurosciences



Center for Brain Research



MEDICAL
UNIVERSITY
OF VIENNA



BRAIN TUMOUR
RESEARCH LABORATORY
Department of Medicine I
Medical University of Vienna



Matthias Preusser
Johannes Hainfellner
Peter Birner
Rupert Bartsch
Thomas Spanberger
Manuel Magerle
Adelheid Woehrer
Monika Hackl
Georg Widhalm
Daniela Prayer
Christine Marosi
Carina Dinhof
Ayseguel Ilhan Mutlu
Orsolya Rajky
Irene Leisser
Institute of Neurology
Department of Medicine I,
Clinical Division of
Oncology