

Article

Predicting Prognosis of Breast Cancer Patients with Brain Metastases in the BMBC Registry – Comparison of Three Different GPA Prognostic Scores

Supplementary Materials

Table S1. Multivariate Cox regression analysis of the time from BM to death.

Parameter	Category	Hazard Ratio	95% CI	p-Value
Biological subtype (acc. to Sperduto 2012)	TNBC			<0.001
	Luminal A (HR+/HER2-)	0.721	(0.592, 0.878)	0.001
	Luminal B (HR+/HER2+)	0.433	(0.348, 0.539)	<0.001
	HER2 (HR-/HER2+)	0.451	(0.358, 0.570)	<0.001
Age at diagnosis of BM, binary	<60			
	≥60	1.44	(1.24, 1.68)	<0.001
KPS	100%			<0.001
	80-90%	1.06	(0.833, 1.35)	0.636
	60-70%	1.85	(1.44, 2.38)	<0.001
	10-50%	2.86	(2.12, 3.86)	<0.001
Number of BM	1			<0.001
	2-3	1.39	(1.13, 1.72)	0.002
	≥4	1.68	(1.38, 2.03)	<0.001
ECM at BM diagnosis	no			
	yes	1.23	(.981, 1.55)	0.072

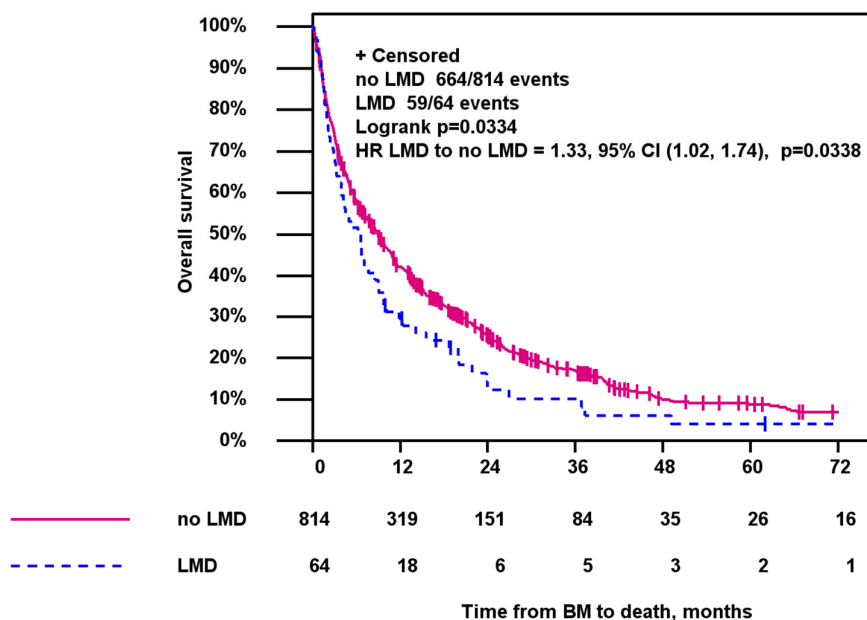


Figure S1. Overall Survival for Leptomeningeal disease and solid BM vs. only solid BM.

Table S2. Progression free Survival according to Breast Cancer subtype.

Survival	Subtype	Median (95% CI)
PFS	TNBC	4.3 (3.5, 5.1)
	Luminal A (HR+/HER2-)	5.2 (4.2, 6.4)
	Luminal B (HR+/HER2+)	11.4 (9.2,13.4)
	HER2 (HR-/HER2+)	9.1 (7.7,11.0)

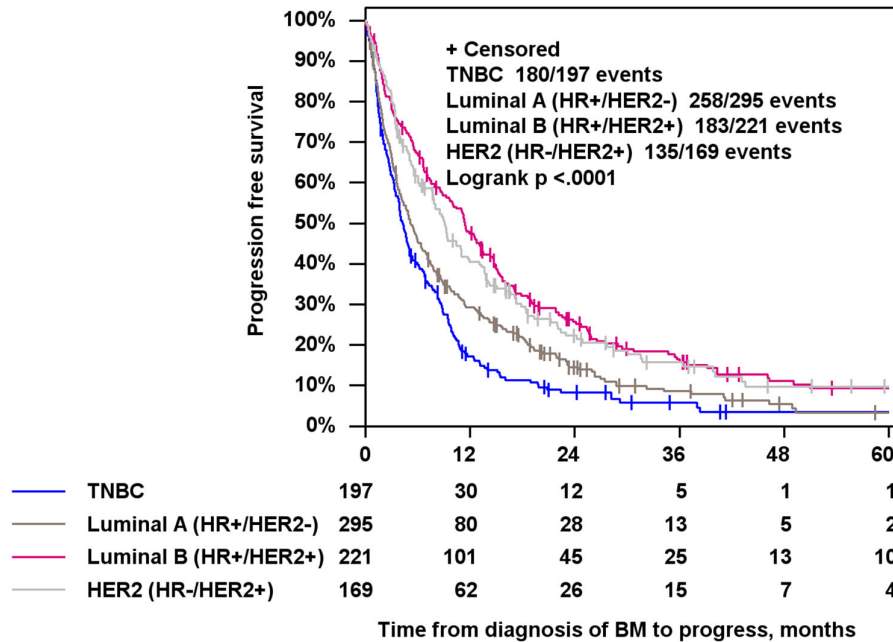


Figure S2. Time from first diagnosis of BM to progress.

Table S3. Distribution of the subtype (according to Sperduto 2012) in patients with meningeosis carcinomatosa (n = 252 of overall 2589 patients).

Subtype According to Sperduto 2012	N(%) (n =252)
TNBC	52 (23.74)
Luminal A	82 (37.44)
Luminal B	49 (22.37)
HER2	36 (16.44)
Missing	33

Table S4. Local treatment according to subtype (Sperduto 2012).

Local Treatment	Subtype (Sperduto 2012)	Number (%)
Surgery only	TNBC (HR-/HER2-)	4 (2.4)
	Luminal A (HR+, HER2 -)	14 (5.6)
	Luminal B/HER2 enriched	9 (4.6)

(HR +, HER2 +)		
	HER2 (HR-/HER2+)	7 (4.6)
Radiotherapy only	TNBC (HR-/HER2-)	120 (73.2)
	Luminal A (HR+, HER2 -)	186 (74.1)
	Luminal B/HER2 enriched (HR +, HER2 +)	133 (68.2)
	HER2 (HR-/HER2+)	105 (68.6)
Surgery and Radiotherapy	TNBC (HR-/HER2-)	40 (24.4)
	Luminal A (HR+, HER2 -)	51 (27.2)
	Luminal B/HER2 enriched (HR +, HER2 +)	53 (27.2)
	HER2 (HR-/HER2+)	41 (26.8)
Missing	TNBC (HR-/HER2-)	33
	Luminal A (HR+, HER2 -)	41
	Luminal B/HER2 enriched (HR +, HER2 +)	26
	HER2 (HR-/HER2+)	16

Table S5. Distribution of BC treatment between different subtypes after the diagnosis of BM.

	TNBC <i>n</i> = 81 N(%)	Luminal A (HR+/HER2-) <i>n</i> = 151 N(%)	Luminal B (HR+/HER2+) N(%) <i>n</i> = 131	HER2 (HR-/HER2+) <i>n</i> = 94 N(%)	Overall <i>n</i> = 457 * N(%)
Chemotherapy	123 (76.9)	143 (46.6)	118 (33.2)	82 (37.8)	466 (44.9)
endocrine therapy	3 (1.9)	94 (30.6)	57 (16.1)	5 (2.3)	159 (15.3)
Targeted therapy	34 (21.3)	70 (22.8)	180 (50.7)	130 (59.9)	414 (39.8)

Table S6. specification of BC treatment after the diagnosis of BM.

	TNBC <i>n</i> = 81 N(%)	Luminal A (HR+/HER2-) <i>n</i> = 151 N(%)	Luminal B (HR+/HER2+) N(%) <i>n</i> = 131	HER2 (HR-/HER2+) <i>n</i> = 94 N(%)	Overall <i>n</i> = 457 * N(%)
Anthracycline	12 (7.5)	32 (10.4)	12 (3.4)	3 (1.4)	59 (5.7)
Taxane based	8 (5.0)	16 (5.2)	20 (5.6)	13 (6.0)	57 (5.5)
Taxane + Anthracycline	32 (20.0)	43 (14.0)	39 (11.0)	25 (11.5)	139 (13.4)
Other chemotherapy	71 (44.4)	52 (16.9)	47 (13.2)	41 (18.9)	211 (20.3)
Tamoxifen		10 (3.3)	7 (2.0)	2 (0.9)	19 (1.8)
Aromatase Inhibitor	2 (1.3)	53 (17.3)	30 (8.5)	2 (0.9)	87 (8.4)
GnRH-Analoga		8 (2.6)	3 (0.3)		11 (1.1)
Other HT	1 (0.6)	23 (7.5)	17 (4.8)	1 (0.5)	42 (4.0)
Trastuzumab	2 (1.3)	6 (2.0)	64 (18)	44 (20.3)	116 (1.2)
Trastuzumab+Pertuzumab		2 (0.7)	15 (4.2)	7 (3.2)	24 (2.3)
Lapatinib	1 (0.6)	6 (2.0)	43 (12.1)	38 (17.5)	88 (8.5)
T-DM1		3 (1.0)	29 (8.2)	26 (12.0)	58 (5.6)
Everolimus		5 (1.6)	1 (0.3)		6 (0.6)
Bisphosphonates	8 (5.0)	18 (5.9)	15 (4.2)	8 (3.7)	49 (4.7)
Denosumab	13 (8.1)	16 (5.2)	9 (2.5)	3 (1.4)	41 (3.9)
Bevacizumab	10 (6.3)	14 (4.6)	2 (0.6)	3 (1.4)	29 (2.8)

Other	2 (0.6)	1 (0.5)	3 (0.3)
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