

SURVIVAL OF WOMEN WITH COMPRESSION SYNDROME DUE TO BONE METASTASIS SECONDARY TO BREAST CANCER

Anke Bergmann^{1,2}, Erica Alves Nogueira Fabro¹, Juliana Flavia de Oliveira^{1,2}, Luiz Guilherme Pinheiro Branco¹, Elisangela Pedrosa¹, Luiz Claudio Santos Thuler¹, Marcelo Adeodato Bello¹

¹ Instituto Nacional de Câncer (INCA) - Rio de Janeiro – Brasil; ² Centro Universitário Augusto Motta (UNISUAM) - Rio de Janeiro – Brasil
Contato: abergmann@inca.gov.br

BACKGROUND

As a result of therapeutic advances in breast cancer, patients are surviving longer, promoting an increased risk for bone metastasis and skeletal-related events. It is estimated that over 50% of breast cancer patients will develop bone metastases during the course of the disease.

OBJECTIVES

To describe survival as well as clinical and demographic profile of women diagnosed with spinal cord or radicular compression syndrome following breast cancer.

METHODS

Study on survival of women diagnosed with compression syndrome after breast cancer diagnosis between May 2006 and April 2007. Outcome was considered when death occurred, and cases that did not evolve to compression syndrome until April 2010 were refused. Survival analysis was carried out using the Kaplan-Meier method and Cox Regression. The study was approved by INCA's research and ethics committee.

RESULTS

During the study period, 36 women were found to have compression syndrome (Table 1). The mean age at diagnosis of breast cancer was 53 years (SD 13.8); 36% of them lived with a partner, and 67% had lower education (until 8 years of study). Breast cancer was diagnosed in clinical stage III in 52% and stage IV in 19% of cases. The breast surgical treatment was possible in 58% of the patients.

Concomitant to bone implant, metastasis was observed in the liver (28%), lungs (14%), and central nervous system (8.3%).

The median time between admission in the hospital (to start the breast cancer treatment) and bone metastasis was 17 months (0-167), and the compression syndrome was 30 months (0-167). After the diagnosis of bone metastasis, the median time until compression syndrome was 1 month (0-92).

The death occurred in 91.7% of cases. The median time of the overall survival was 45 months after admission (95% CI 25 – 66), 22 months after bone metastasis (95% CI 20-34), and 9 months after compression syndrome (95% CI 3-14) (Figure 1).

In the Kaplan Meier analyses, women with single bone metastasis presented better survival (mean of 22 months) than with bone and other sites metastasis (mean 12 months) ($p < 0,043$). The patients that used bisphosphonates after bone metastasis had mean of 22 months survival and those without this therapy had 12 months ($p < 0,043$) (table 2).

In the Cox Regression, after adjusting the effect of the age and clinical stage, the only variable that was associated with increased survival after compression syndrome was the use of bisphosphonates after bone metastasis (HR= 9,28 IC 95% 2,82 – 30,62 $p = 0,0001$).

Table 2 – Clinical and demographic characteristics of compression syndrome (n = 36)

Variable	* Frequency (n)	Survival Time (months)		
		Mean	(95% CI)	p-value
Age at breast cancer diagnosis				
<50 years	16	17.58	10.24 – 24.92	0.989
≥50 years	20	16.17	9.08 – 23.26	
Years of schooling				
<8 years	20	17.43	11.48 – 23.38	0.684
≥8 years	10	18.45	5.76 – 31.14	
Marital status at breast cancer diagnosis				
Lives with partner	12	15.06	7.38 – 22.74	0.352
Lives without partner	21	19.77	12.79 – 26.76	
Estrogen Receptor				
Positive	23	17.47	11.29 – 23.66	0.071
Negative	08	8.53	2.58 – 14.49	
Progesterone Receptor				
Positive	12	13.77	5.19 – 22.34	0.843
Negative	19	15.74	9.81 – 21.68	
Histological Grade (Elston)				
1	0	---	---	0.965
2	13	16.34	7.65 – 25.02	
3	05	16.13	0.0 – 33.58	
Histological type				
Infiltrating ductal carcinoma	30	16.65	11.33 – 21.96	0.179
Others	02	5.06	0.00 – 11.99	
Clinical Stage (TNM)				
III and IV	25	15.15	9.36 – 20.93	0.311
I and II	11	20.87	10.63 – 31.11	
Metastasis				
Bone	16	22.26	13.60 – 30.94	0.043
Bone and other sites	20	12.37	7.16 – 17.58	
Type of compression syndrome				
Spinal cord	21	14.02	8.26 – 19.77	0.255
Radicular	13	21.71	12.19 – 31.22	
Spinal cord + radicular	02	9.93	7.12 – 12.79	
Use of bisphosphonates after bone metastasis				
No	09	4.34	0.30 – 8.38	0.001
Yes	27	20.91	15.11 – 26.71	
Palliative chemotherapy				
No	14	13.52	5.65 – 21.39	0.448
Yes	21	18.60	12.27 – 24.93	
Palliative hormonotherapy				
No	12	11.17	4.42 – 17.93	0.085
Yes	21	19.39	12.84 – 25.93	

* The discrepancies in the totals values corresponding to missing values in each variable

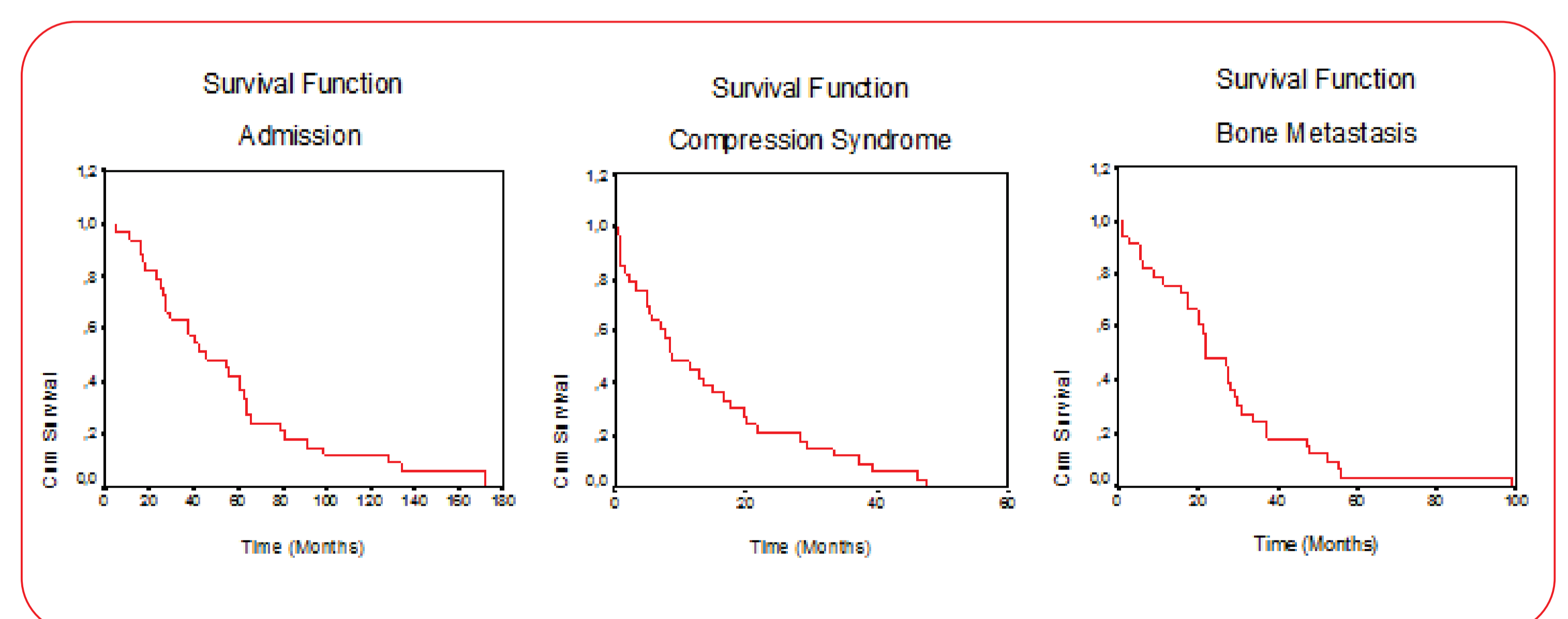


Figure 1: Overall survival after admission, compression syndrome and bone metastasis

Table 1 – Characteristics of compression syndrome (n = 36)

Variable	n	Percentage (%)
Compression Syndrome		
Spinal cord	21	58.3%
Radicular	13	36.1%
Spinal cord and radicular	02	5.6%
Site of the Compression Syndrome		
Dorsal	18	72.0%
Cervical	04	16.0%
Lumbar	03	12.0%
Local of Radicular Compression		
2 nd Lumbar vertebra	05	29.4%
3 rd Lumbar vertebra	03	17.6%
4 th Lumbar vertebra	04	23.5%
5 th Lumbar vertebra	05	29.4%

CONCLUSION

In this study, women were young and diagnosed with clinical advanced breast cancer stage. The median time between the registration in the institution for treatment of breast cancer and bone metastasis was 17 and 30 months to compression syndrome. Overall survival was 22 months after diagnosis of bone metastasis and 9 months after spinal cord or radicular compression syndrome. After adjustment of age and clinical stage, the only variable that was associated with increased survival after compression syndrome was the use of bisphosphonates after bone metastasis. Studies with larger sample sizes and that, in addition to clinical and demographic characteristics, include molecular variables, must be performed to identify predictors of overall survival after bone metastases and compression syndrome.