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Survival Rate of Metastatic Bone Disease Patients in Haji Adam Malik Hospital Medan

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Abstract : Objective -The aim of this study was to determining the survival rate of patient with metastatic bone disease in Haji Adam Malik Hospital Medan. **Material and Methods**-The aim of this retrospective study is to determine the survival rate of metastatic bone disease patients. Fifty-five patients who diagnosed of metastatic bone disease during January 2012 – December 2017 were entered the inclusion criteria were ask and demographic data were also recorded to evaluate further associated with primary lesion, and surviving status. Survival rate was assessed by Kapplan – Meier Curve. **Results**- From January 2012 to December 2017, a total 55 metastatic bone disease patients were aged 43-77 years. Breast cancer (40%) was the most common primary cancer, with the lowest survival rate in cervic (10 months). Overall, patients who treat surgically and chemotherapy have survival rate 17 months. **Conclusion**-This study revealed that female (33 patients) have 15 months of survival rate and mael (22 patients) have 18 months of survival rate. Breast was the most common primary location tumor (40%) and have highest survival rate (20 months). Cervix was the lowest survival rate (10 months) Overall patients who underwent surgical and chemotherapy have survival rate in 17 months.

Keywords: Metastatic Bone Disease, Survival Rate, Kapplan Meier Curve.

Introduction

Metastatic bone disease is the most common malignancy of bone. It is estimated by the American Cancer Society that in 1999 there would be more than 1.2 million new cases of cancer diagnosed in US. Nearly half of these cases involve tumors commonly metastasize to bone. Metastatic tumor of bone are tumors that spread to bone from another primary site in the body. Metastasize is a process that involve loss of intervcellular cohesion, cell migration, angiogenesis access to systemic circulation, survival in circulation, evasion of local immune responses and growth it distant organs.

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Bone is the third most frequent site of metastasis behind lung and liver. Prostate and breast cancer are responsible for the majority of skeletal metastases. The overall incidence of bone metastasis is not known. The relative incidence of bone metastasis by type of tumor in patients with advanced metastatic disease is 65-75% in breast cancer;; 65-775% in prostate; 60% in thyroid; 30-40% in lung; 40% in bladder; 20-25% in renal cell carcinoma; and 14-45% in melanoma.

Bone metastasis are classified as osteolytic, osteoblastic or mixed according to primary mechanism of interference with normal bone remodelling. Osteolytic, characterized by destruction of normal bone, present in multiple myeloma, renal cell carcinoma, melanoma, non-small cell lung carcinoma, non-hodgkin lymphoma. The great majority of breast cancer produces osteolytic metastases. This bone destruction is primarily mediated by osteoclasts and not a direct effect of tumor cells. The receptor activator of NF-kappaB ligand (RANKL) play a critical role in the formation of osteoclasts by stimulating precursor cells when binds to receptor activator of NF-kappaB (RANK) on the cell membrane ot osteoclast precursor.

Osteoblastic characterized by deposition of new bone, present in prostate cancer, carcinoid, small cell lung carcinoma. The mechanism of osteoblastic metastasis are poorly understood. Transforming growth factor, bone morphogenic proteins (BMP) and endothelin-1 are associated with osteoblastic generation.

The presentation of a patients with a metastatic bone tumor is variable and depends largely on location. The most common presenting complain is pain that is steadily progressive and is not relieved completely with rest.

The evaluation of a patient with a suspected malignancy of bone begins with a history and physical examination followed by appropriate laboratory and imaging studies. The principles of treatment are to control local symptoms, maintain function, prevent pathological fractures, improve or maintain mobility, relieve pain and improve quality of life. The complexity of these cases requires a multi-disciplinary approach to management which may include a specialist bone tumor unit. The majority of patients with metastatic bone disease will not require any surgical intervention, the mainstay of treatment being bisphosponates and radiotherapy.

Methods

This retrospective study was conducted at Medical Faculty of Sumatera Utara University/Haji Adam Malik Hospital, North Sumatera, Indonesia for 3 months from April 2019 to June 2019 by collecting history of medical record who diagnosed metastatic bone disease and 55 patients met the inclusion criteria.

Patients were called back and take the latest condition which consist of age, sex, daily activity and also the primary location of tumor and treatment.

The survival rate of the patients were evaluated with The Kaplan-Meier Survival Curve based on the data.

The study was approved by Health Research Ethical Committee of Medical Faculty of North Sumatera University/Haji Adam Malik Hospital and informed consent was obtained from all subjects.

Results

The study included 55 patients with metastatic bone disease, 33 female and 22 male with survival rate is 17 months with mean age is 55 years old and according to the primary site of tumor; breast cancer was the highest survival rate, followed by lung, prostate and cervix (18 months, 18 months, 10 months). From this study conclude that patient who did operation and chemotherapy have 20 months of survival rate, and patients have chemotherapy is 16 months.

Table 1.Characteristics distribution of subjects

Variable	Total
Sex: n (%)	
- Female	33 (60%)
- Male	22 (40%)
Age (Years) : n (%)	
- ≤ 55 Years old	28
- > 55 Years old	27
Primary Tumor Location : n (%)	
- Lung	12 (21.8%)
- Breast	22 (40%)
- Prostate	12 (21.8%)
- Cervix	9 (10%)
Treatment: n (%)	
- Chemotherapy	34 (61.7%)
- None	1 (1.8%)
- Chemotherapy & Surgery	20 (36.3%)

Table 2. Status surviving of metastatic bone disease patients

Variable	Status		Total
	Sensor (hidup)	Event (meninggal)	
Sex : n (%)			
- Female	8 (24,2%)	25 (75,8%)	33 (100,0%)
- Male	0 (0%)	22 (100,0%)	22 (100,0%)
Age (years): n (%)			
- ≤ 55 Years	7 (25,0%)	21 (75,0%)	28 (100,0%)
- > 55 years	1 (3,7%)	26 (96,3%)	27 (100,0%)
Primary Tumor : n (%)			
- Lung	0 (0%)	12 (100,0%)	12 (100,0%)
- Breast	8 (36,4%)	14 (63,6%)	22 (100,0%)
- Prostate	0 (0%)	12 (100,0%)	12 (100,0%)
- Cervix	0 (0%)	9 (100,0)	9 (100,0%)
Treatment : n (%)			
- Chemotherapy	1 (2,9%)	33 (97,1%)	34 (100,0%)
- None	0 (0%)	1 (100,0%)	1 (100,0%)
- Chemotherapy & Surgery	7 (35,0%)	13 (85,5%)	20 (100,0%)

Discussion

The main purpose of this study was to knowing the survival rate of patients with metastatic bone disease. The result of this study showed that according to the sex and site of primary tumor have low of survival rate. This result has similar result with research by Vivak et all that there is similarities of sex in metastatic bone disease patient. Based on American Cancer Society, that the age of the patient is above 50 year and have similarities with this study. The result of this study revealed that breast cancer is the most of primary tumor site and according to Macedo et all which similar with this study that breast cancer is the most primary site of tumor.

There are several difficult to complete this study including collect the sample because most of the patients come to ours Centre with late condition and did traditional treatment before seek medical treatment. This condition lead to late diagnostic and make the condition is hard to treat. More studies, samples and metastasis location of bone are recommended for future research.

Conclusion

Metastatic bone disease remains an incurable disease that the survival rate was low. Regarding the prognostic impact of sex, survival rate of the patients seem to be betters among male patients than female. There is four group of primary site of tumor which breast seems have the highest of survival rate and cervix is the lowest. The treatment also influence the survival rate, that combination of surgery and chemotherapy has highest survival rate and give the patients chance to survive.

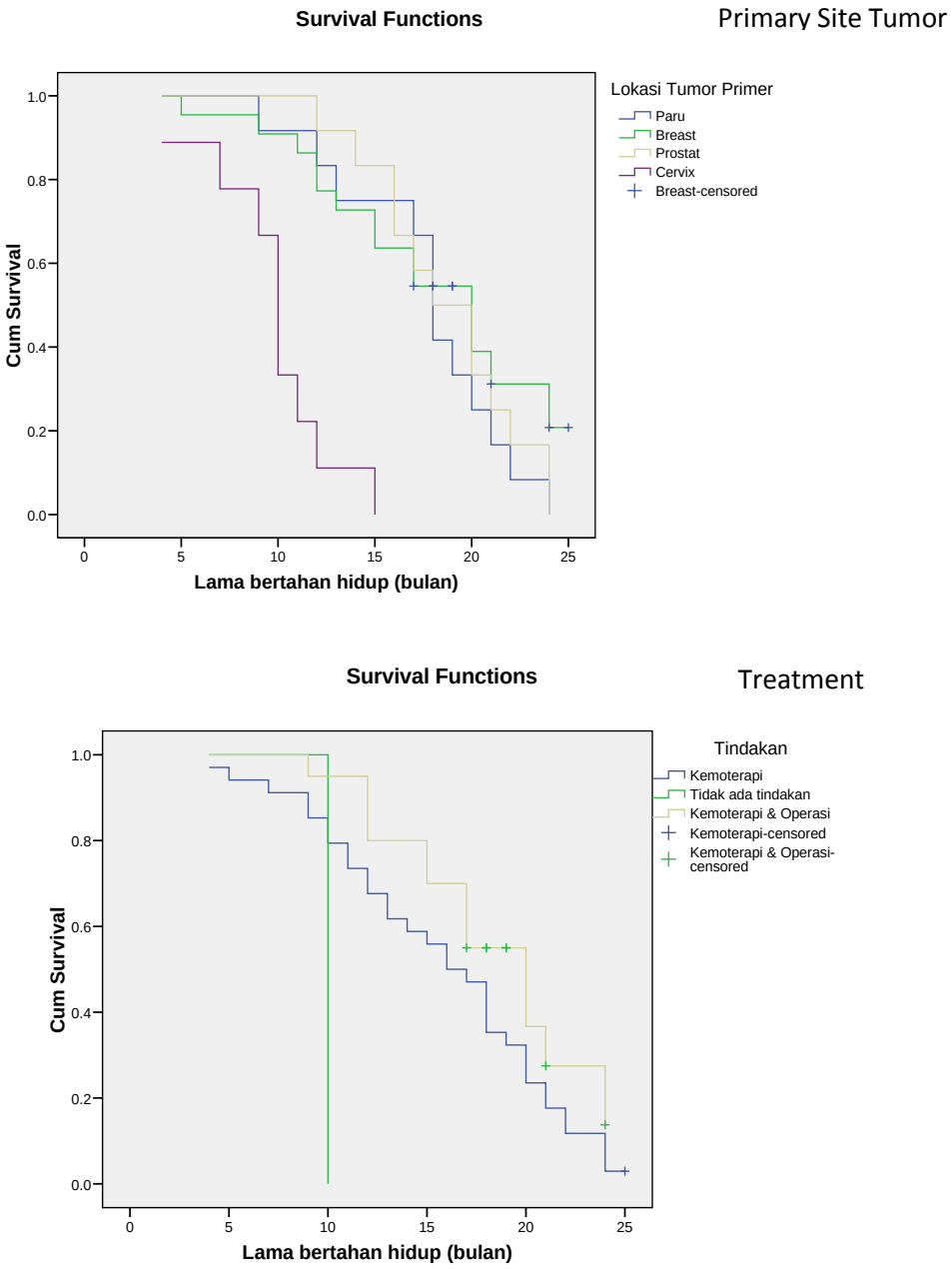

Fig 1. Kaplan Meier survival graphic for patient .(a. Based on primary site tumor), (b. Treatment)

Ethical Approval

Ethical approval no 525/TGLKEPK FK USU-RSUP HAM/2019

Conflict of Interest: No declared conflict of interest relevant to this article was reported.

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