

Difficulties Nurses Report in Caring for Patients with Bone Metastases and Their Expectations after Participating in a Bone Metastasis Cancer Board: A Questionnaire Study

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Background: Patients with bone metastases often face physical, mental, and social challenges that require multidisciplinary management. To improve treatment and practice, we conducted a questionnaire survey to assess nurses' opinions of problems related to caring for patients with bone metastases. In addition, we investigated nurses' perceptions of bone metastases after participating in a Bone Metastasis Cancer Board (BMCB).

Methods: An anonymous questionnaire survey on problems in bone metastasis treatment and the BMCB was conducted. The respondents were nurses with more than 1 year of clinical experience working in wards where patients with bone metastases were admitted.

Results: The number of valid responses was 224. Almost all the nurses felt anxiety about the risk of pathological fracture and paralysis while caring for patients with bone metastases. To reduce this anxiety, about 90% of the nurses supported the suggestion that "patients should be referred to an orthopedic surgeon in advance to obtain opinions on load restrictions". Nurses who had participated in the BMCB had higher expectations regarding treatment, multidisciplinary collaboration, and sharing and accumulating knowledge and experience.

Conclusion: To improve treatment and nursing care for patients with bone metastases, it is important to make regular BMCB meetings more functional and to actively consult with specialists.

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Key words: bone metastasis, nurse, pathological fracture, paralysis, questionnaire

Introduction

Bone metastasis is a clinical complication in nearly 10% of cancer patients. It causes complications such as severe pain, pathologic fracture, and spinal cord paralysis; markedly decreases activities of daily living; and shortens life expectancy^{1–3}. Patients with bone metastases often face physical, mental, and social challenges that require multidisciplinary involvement. In recent years, the Bone Metastasis Cancer Board (BMCB), a multidisciplinary conference specializing in bone metastasis, has gradually spread in Japan^{4–12}.

In their practice, nurses are in close contact with patients with bone metastases and are thus in a key posi-

tion to provide information and education to patients and their families¹³. Nurses can recognize symptoms suggestive of skeletal-related events due to bone metastases¹⁴. However, nurses must deal with challenges such as poor pain control, poor control of psychiatric and social problems of patients, and the elevated risk of pathological fracture and spinal cord paralysis.

We previously reported the results of a questionnaire distributed to therapists regarding problems during rehabilitation, such as the risk of pathological fracture and paralysis. That survey revealed considerable anxiety related to the risk of pathological fracture and paralysis during treatment, and the results suggest that it is neces-

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at the maternity ward, psychiatric ward, intensive care units, and altitude emergency and critical care ward. The pediatric ward was also excluded. The care of children with bone metastases is different from that of adults with bone metastases. A questionnaire was conducted anonymously among the nursing staff in two parts: problems in providing nursing care for patients with bone metastases and the BMCB.

hospital in Tokyo has 877 beds and 42 units. The BMCB has been held almost since April 2016 but has been suspended since 2020 because of the COVID-19 pandemic.

Q6 Since April 2016, our hospital has held a monthly Bone Metastasis Cancer Board. Do you know about it? Please check the most appropriate answer.

1. I didn't know about the Bone Metastasis Cancer Board held at our hospital.
2. I've heard of the Bone Metastasis Cancer Board, but I didn't know what it was.
3. I know what the Bone Metastasis Cancer Board does.
4. I have participated in the Bone Metastasis Cancer Board.

Q7 What do you expect from the Bone Metastasis Cancer Board at our hospital? Please check all appropriate answer(s).

1. Standardization of treatment for bone metastases
2. Setting treatment goals and deciding treatment strategies for individual patients
3. Resolving treatment bottlenecks (pain, postural limitations, etc.) for individual patients
4. Building smooth cooperation and support relationships among multiple clinical departments
5. Sharing and accumulation of knowledge and experience on bone metastasis among participating members
6. Others ()

Q8 The Bone Metastasis Cancer Board consists of various departments, such as palliative care, rehabilitation, orthopedic surgery, pharmacy, primary cancer, nursing, and medical social workers. It holds a conference to assess and solve problems of patients with bone metastasis. Please let us know if you have any questions or requests regarding the Bone Metastasis Cancer Board.

Fig. 2 Questionnaire-2

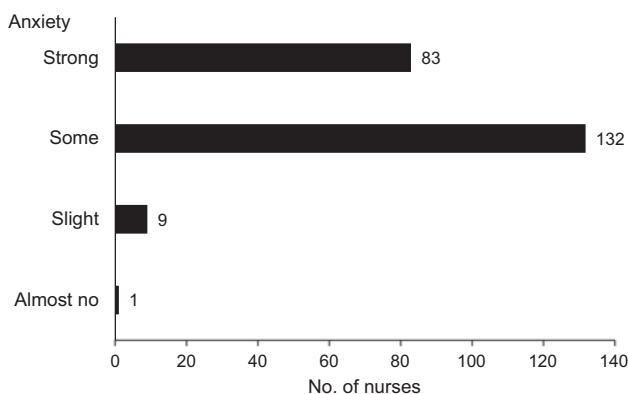


Fig. 3 Nurses' anxiety regarding the risks of pathological fracture and paralysis while caring for patients with bone metastases (Q3)

The questionnaire survey was conducted in July 2020.

In the BMCB in our hospital, about 20 medical staff examine and discuss management of one to four patients with bone metastases. BMCB participants include orthopedic surgeons (musculoskeletal tumor and spine surgeons), rehabilitation doctors, physical therapists, occupational therapists, speech therapists, a palliative care doctor, pharmacists, the physician in charge of the primary cancer, ward nurses, and medical social workers. The content differs by patient but includes diagnosis, treat-

ment, and discharge/transfer.

The results for each question were tallied and examined individually. In addition, we examined the relationship between nurses' experience and the responses. After age-group matching, we investigated nurses' perceptions by comparing the responses of nurses who participated in the BMCB with a control group who did not participate. Specifically, respondents who selected option 4 of Q6 were compared with those who selected options 1, 2, and 3. The contents of the examination were the results of single select multiple choice questions (Q1, Q2, and Q3 [option 1 vs. options 2, 3, and 4]) and each option of the multiple-choice questions (Q4, Q5, and Q7). Nurses with no experience caring for a patient with bone metastasis during the most recent 1-year period were excluded. The relationship between duration of nurses' clinical experience and the response to the questionnaire was evaluated by using the chi-square test, followed by the Bonferroni test for post hoc analysis. The relationship between participation of nurses with 10 or more years of clinical experience on the BMCB and the response to the questionnaire was evaluated with the chi-square test.

Results

The total number of responses was 247. However, 22

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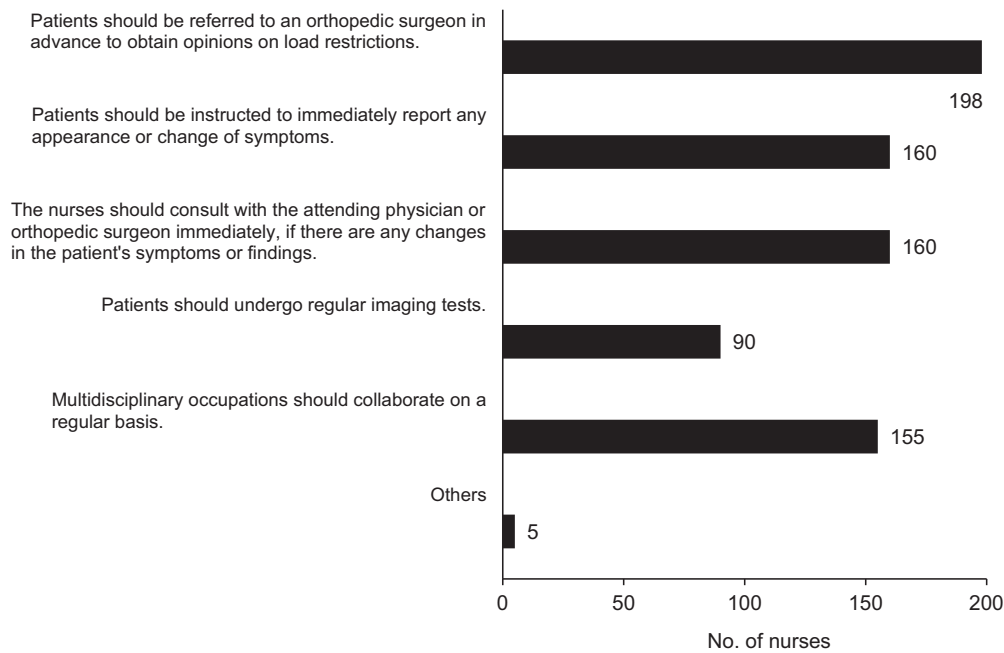


Fig. 4 Suggestions on how to reduce nurses' anxiety regarding the risks of pathological fracture and paralysis while caring for patients with bone metastases (Q4)

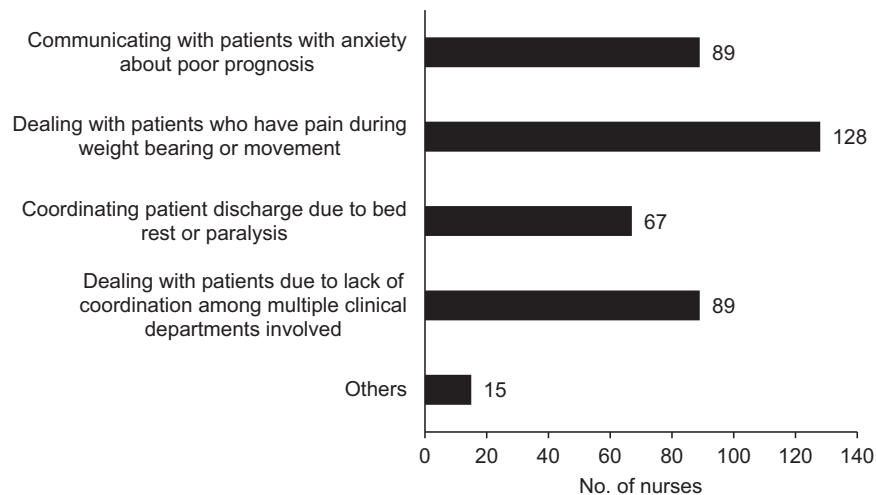


Fig. 5 Additional difficulties in caring for patients with bone metastases (Q5)

nurses were excluded because they had no experience treating patients with bone metastases during the most recent 1-year period. Therefore, 225 responses were analyzed. The numbers of valid responses for the questions were as follows:

Q1. The number of valid responses was 224: 90 from nurses with less than 5 years of clinical experience, 49 from those with 5 years to less than 10 years, and 85 from those with 10 or more years of clinical experience.

Q2. In the most recent 1-year period, 225 nurses reported caring for at least one patient with bone metastases; 22 had no such experience.

Q3. The number of valid responses was 225. Most nurses felt anxiety regarding the risks of pathological fracture and paralysis in patients with bone metastases (Fig. 3).

Q4. The number of valid responses was 225. About 90% of the nurses supported the suggestion that "patients should be referred to an orthopedic surgeon in advance to obtain opinions on load restrictions", to reduce their anxiety about the risk of pathological fracture and paralysis while caring for patients with bone metastases (Fig. 4). About 70% of respondents supported the suggestions that "patients should be instructed to immediately

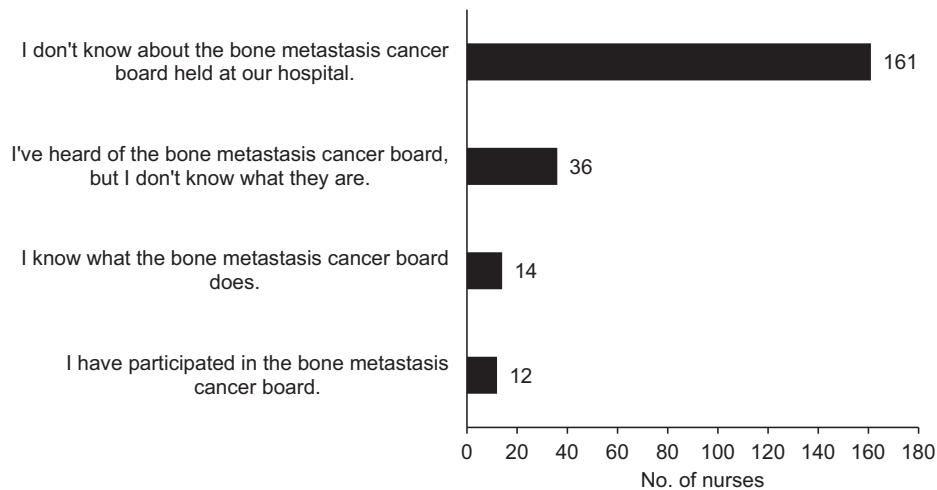


Fig. 6 Nurses' interest and participation in the Bone Metastasis Cancer Board (Q6)

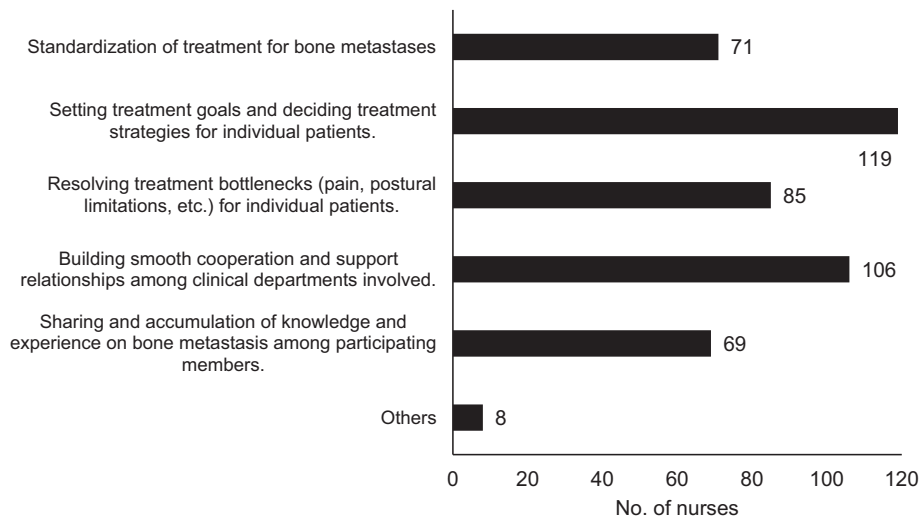


Fig. 7 What nurses expect from the Bone Metastasis Cancer Board (Q7)

report any appearance or change of symptoms”, that “nurses should consult immediately with the attending physician or an orthopedic surgeon if there are any changes in the patient’s symptoms or findings”, and that “multidisciplinary occupations should collaborate on a regular basis”. About 40% of respondents supported the suggestion that “patients should undergo regular imaging tests”. There were nine choices in the option “others”, including “instructing patients and their families on safe movements and postures”.

Q5. The number of valid responses was 225. In addition to anxiety regarding pathological fracture and paralysis, most nurses considered it difficult to care for a patient with pain during weight bearing or movement (Fig. 5). About 40% of respondents considered it difficult to communicate with anxious patients about their poor prognosis and to care for patients, because of the lack of

coordination among multiple clinical departments. About 30% of respondents considered it difficult to coordinate patient discharge due to bed rest or paralysis. There were 14 descriptions in the option “other”: eight were difficulties related to the patient’s inability to understand, or adhere to, load/mobility restrictions.

Q6. The number of valid responses was 223. Eighty percent of nurses were unaware of the BMCB at our hospital. Only 12 nurses participated in the BMCB (Fig. 6).

Q7. The number of valid responses was 225. Half the nurses expected to set treatment goals, decide on treatment strategies for individual patients, and build relationships for smooth cooperation and support among clinical departments from the BMCB (Fig. 7). Furthermore, one-third of the nurses expected standardization of treatment for bone metastases, resolution of treatment bottlenecks (such as pain and postural limitations) for in-

Table 1 Associations of duration of nurses' clinical experience with questionnaire responses

Nurses' responses	Experience (years)			<i>p</i>
	<4	5-9	10≤	
Q3. Do you feel anxious that patients with bone metastasis may develop pathological fracture or paralysis while nursing, such as transferring to wheelchairs and changing positions? Please check the most appropriate answer.				<0.001
Strong (1)	18 ^{a, b}	22	43	
Some, slight, or almost no (2-3)	72	27	42	
Q6. Since April 2016, our hospital has held a monthly Bone Metastasis Cancer Board. Did you know about it? Please check the most appropriate answer.				<0.001
Hasn't participated (1-3)	90 ^b	49 ^b	73	
Has participated (4)	0	0	12	
Q7. 4. Building smooth cooperation and support relationships among the multiple clinical departments involved				0.0066
Yes	31 ^b	27	48	
No	59	22	37	

Only items for which a significant difference was observed are shown.

^aSignificantly different from "5-9" ($p < 0.017$, Bonferroni correction)

^bSignificantly different from "10≤" ($p < 0.017$, Bonferroni correction)

dividual patients, and sharing and accumulating knowledge and experience on bone metastases among participants in the BMCB. In the option "others", there were six descriptions, which were categorized as "patient's decision support".

Q8. There were 39 descriptions in the option "others". Of the 39 descriptions, 27 were "BMCB needs to be made known to more hospital staff".

Nurses with greater clinical experience were significantly more anxious about the risks of pathological fracture and paralysis (Table 1). All nurses who participated in the BMCB had 10 or more years of clinical experience. Nurses with greater clinical experience were significantly more likely to expect the building of smooth cooperation and support relationships among multiple clinical departments from the BMCB.

Nurses who had participated in the BMCB were significantly more likely to expect the following: "setting treatment goals and deciding treatment strategies for individual patients", "building smooth cooperation and support relationships among multiple clinical departments involved", and "sharing and accumulating knowledge and experience of bone metastases among participating members" (Table 2-1, 2-2).

Discussion

This study's most important finding was that most of the nurses felt anxious about the risks of pathological fracture and paralysis while caring for patients with bone metastases. To reduce this anxiety, many nurses supported advance consultation with an orthopedic surgeon,

reporting of any abnormality to a physician, patient education, and regular multidisciplinary collaborative conferences. Furthermore, the nurses had other difficulties, such as caring for patients with bone metastases who report pain during weight bearing or movement.

In a previous questionnaire survey of 67 nurses in hospital wards who mainly provided care to cancer patients, 90% reported that they had concerns about skeletal-related events, specifically "bed rest level and risk management" and "pain control". In the same study, 88.0% of nurses were concerned about bone metastases, as compared with 54.5% of physicians. The authors concluded it would be necessary to introduce "a skeletal related events conference with multidisciplinary collaboration" and "a system in which all patients with bone metastasis can be examined".

The present study's other important finding was that nurses had many expectations for the BMCB. Nurses who had participated in the BMCB had greater expectations than other nurses for setting treatment goals and deciding treatment strategies for individual patients, building smooth cooperation and support relationships among multiple clinical departments, and sharing and accumulating knowledge and experience on bone metastases among participating members.

The BMCB is generally held every 1 to 4 weeks and ideally includes orthopedic surgeons, rehabilitation doctors, physical therapists, occupational therapists, speech therapists, palliative care doctors, medical oncologists, radiologists, nurses, pharmacists, medical social workers, and primary cancer doctors^{5,6,10-12}. The topics to be dis-

Table 2-1 Associations of Bone Metastasis Cancer Board participation among nurses with 10 or more years of clinical experience with their responses, in which duration of clinical experience groups were matched

Nurses' responses	Participation in BMCB		<i>p</i>
	Yes (12)	No (73)	
Q3. Do you feel anxious that bone metastatic patients may develop pathological fracture or paralysis while nursing, such as when transferring them to wheelchairs and changing positions? Please check the most appropriate answer.			0.2293
Strong (1)	8	35	
Some, slight, or almost no (2-3)	4	38	
Q4. 1. Patients should be referred to an orthopedic surgeon in advance to obtain opinions on load restrictions.			0.9894
Yes	11	67	
No	1	6	
Q4. 2. Patients should be instructed to immediately report any appearance or change of symptoms.			0.1559
Yes	11	53	
No	1	20	
Q4. 3. Nurses should consult with the attending physician or an orthopedic surgeon immediately if there are any changes in the patient's symptoms or findings.			0.1342
Yes	11	52	
No	1	21	
Q4. 4. Patients should undergo regular imaging tests.			0.9586
Yes	5	31	
No	7	42	
Q4. 5. Multidisciplinary occupations (nurse, primary cancer department, orthopedic surgeon, rehabilitation, palliative care department, etc.) should collaborate on a regular basis.			0.1805
Yes	11	54	
No	1	19	

BMCB: Bone Metastasis Cancer Board

cussed include diagnosis, treatment, pain control, mental health, rehabilitation, general condition and prognosis, and support of home-based medical care^{5,6,10}.

Several reports have been published on the impact of BMCBs on patients. A retrospective study of a weekly multidisciplinary approach consisting of 2,194 team visits to 1,628 patients with bone metastases between 2005 and 2015 showed significant improvements in pain and general activities at 1 week after the start of the intervention⁸. In the same study, an anonymous questionnaire survey of 2,051 patients revealed that approximately 70% of respondents expressed high satisfaction with this service. A retrospective review of 24 multidisciplinary conferences for 78 patients with bone metastases between 2011 and 2012 showed that significantly more patients were discharged from hospital after the conference began than before¹¹. Moreover, a retrospective review of a BMCB conducted 33 times between January 2014 and December 2016 reported that more patients with bone metastases consulted the orthopedics department after the BMCB started and that the proportion of patients with less advanced disease (outpatients and patients with low-grade

pain) increased⁶.

These studies suggest that the BMCB is an effective method for treating bone metastases; however, BMCBs are limited by the time until the next meeting and the number of patients to be examined. For more patients to be examined at a BMCB, it is necessary to consider the information needed, patient selection, and frequency. Furthermore, providing nurses with BMCB information is important, as 80% of the present nurses were unaware of the BMCB. By attending this meeting, nurses can better understand the nursing care points for individual patients, provide nursing care with greater confidence, and accumulate knowledge and experience. However, when a patient needs urgent treatment before the next BMCB, the necessary specialist should be consulted. Nurses can play an important role in connecting patients to multidisciplinary experts, as they have the closest contact with patients.

The present study has some limitations. First, the data were collected with a questionnaire survey. Thus, detailed data were not available for the respondents, which may bias the findings. Second, the small number of re-

Table 2-2 Associations of Bone Metastasis Cancer Board participation among nurses with 10 or more years of clinical experience with their responses, in which duration of clinical experience groups were matched

Nurses' responses	Participation in BMCB		<i>p</i>
	Yes (12)	No (73)	
Q5. 1. Communicating with patients with anxiety about poor prognosis			0.7565
Yes	5	27	
No	7	46	
Q5. 2. Dealing with patients who have pain during weight bearing or movement			0.3406
Yes	6	47	
No	6	26	
Q5. 3. Coordinating patient discharge due to bed rest or paralysis			0.0562
Yes	7	22	
No	5	51	
Q5. 4. Dealing with patients because of lack of coordination among multiple clinical departments involved			0.5048
Yes	7	35	
No	5	38	
Q7. 1. Standardization of treatment for bone metastases			0.7174
Yes	3	22	
No	9	51	
Q7. 2. Setting treatment goals and deciding treatment strategies for individual patients			0.0237*
Yes	11	42	
No	1	31	
Q7. 3. Resolving treatment bottlenecks (pain, postural limitations, etc.) for individual patients			0.0811
Yes	8	29	
No	4	44	
Q7. 4. Building smooth cooperation and support relationships among multiple clinical departments involved			0.0010*
Yes	12	36	
No	0	37	
Q7. 5. Sharing and accumulating knowledge and experience on bone metastasis among participating members			<0.001*
Yes	11	21	
No	1	51	

BMCB: Bone Metastasis Cancer Board

**p*<0.05

spondents participating in the BMCB may have affected the analysis. Despite these limitations, the study had several strengths. Few studies have investigated the connection between difficulties in providing nursing care to patients with bone metastases and BMCBs, and this is the first study to investigate the characteristics of participating nurses. The results suggest methods to reduce anxiety and difficulties in caring for patients with bone metastases.

In conclusion, many nurses felt anxious about the risks of pathological fracture and spinal cord paralysis and reported difficulties in caring for patients with pain. To address these concerns, nurses believe it is important to have the patient see an orthopedic surgeon in advance and discuss the problems in regular multidisciplinary collaborations. In addition, nurses who participated in

the BMCB had greater expectations of multidisciplinary collaboration and accumulation of experience and knowledge. To improve treatment and nursing care for patients with bone metastases, it is important to make regular BMCBs more functional and to actively consult with specialists.

Conflict of Interest: The authors declare no conflicts of interest.

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