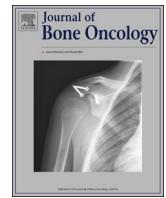




ELSEVIER

Contents lists available at ScienceDirect

Journal of Bone Oncology

journal homepage: www.elsevier.com/locate/jbo

Research Article

Bone metastases in breast cancer: Frequency, metastatic pattern and non-systemic locoregional therapy

Kirsten Steinauer^{a,b}, Dorothy Jane Huang^c, Serenella Eppenberger-Castori^d, Esther Amann^{b,e}, Uwe Güth^{b,c,e,*}^a Cantonal Hospital Winterthur, Department of Radiation Therapy and Radiation Oncology, Brauerstrasse 15, CH-8401 Winterthur, Switzerland^b Breast Center "SenoSuisse", Brauerstrasse 15, CH-8401 Winterthur, Switzerland^c University Hospital Basel (UHB), Department of Gynecology and Obstetrics, Spitalstrasse 21, CH-4031 Basel, Switzerland^d UHB, Institute of Pathology, Schonbeinstrasse 40, CH-4031 Basel, Switzerland^e Cantonal Hospital Winterthur, Department of Gynecology & Obstetrics, Brauerstrasse 15, CH-8401 Winterthur, Switzerland

ARTICLE INFO

Article history:

Received 2 April 2014

Received in revised form

4 May 2014

Accepted 7 May 2014

Available online 20 May 2014

Keywords:

Breast cancer

Bone metastases

Palliative radiotherapy

Palliative surgery

ABSTRACT

Background: The study evaluates the frequency of and indications for bone-metastases (BM)-related surgery and/or radiotherapy in the palliative breast cancer (BC) situation and analyzes in which phase of the palliative disease course surgery and/or radiotherapy was applied.

Methods: 340 patients who developed distant metastatic disease (DMD) and died (i.e. patients with completed disease courses) were analyzed.

Results: From the entire study cohort, 237 patients (69.7%) were diagnosed with BM. Out of these, 116 patients (48.9%) received BM-related radiotherapy and/or surgery during the palliative situation.

Radiotherapy: 108 patients (45.6%) received 161 series (range: 1–5) with 217 volumina (range: 1–8) on 300 osseous sites. At 75.3% of the radiated sites, the spine was the most frequent radiated location. Eighty-eight series (54.7%) were performed in the first third of the metastatic disease survival (MDS) period. The median survival after radiotherapy was 14 months (range: 0.2–121 months).

Surgery: In 37 patients (15.6%), 50 procedures (range: 1–4) were necessary to stabilize BM. The femur predominated with 56.0% of the procedures. Twenty procedures (40.0%) were performed in the first third of survival follow-up. The median survival after surgery was 13.5 months (range: 0.5–49 months).

BC patients with BM had a significantly improved MDS when radiotherapy and/or surgery for skeletal metastases was embedded in the palliative approach (27.5 months vs. 19.5 months, $p < 0.001$). From the 118 patients who had a MDS of ≥ 24 months, the majority (54.2%) had BM-related radiotherapy and/or surgery during the palliative course.

Conclusions: Metastatic BC has become increasingly viewed as a chronic disease process. In a general palliative therapy approach, which allows for treatment according to the principles of a chronic disease, non-systemic therapy for BM, in particular radiotherapy, has a clearly established role in the therapy concept.

© 2014 Elsevier GmbH. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

In many patients with distant metastatic breast cancer (BC), the skeleton is the site of the most significant tumor burden [1]. In some cases, bone metastases (BM) are relatively silent but many patients, particularly those who have less aggressively growing tumors with a long-term course, develop clinically symptomatic lesions which are not infrequently associated with severe pain. In this situation, radiotherapy and/or surgery might be performed

with palliative intention and the primary goals of treatment include prevention and palliation of symptoms, maintenance or improvement of quality of life and prolongation of survival [2–4].

In the literature, there exists a large amount of information on palliative radiotherapy and surgical interventions on BM during the disease course of metastatic BC (overview in: [2,5–7]). However, most of the published studies evaluate only specific therapy options in pre-selected groups of patients, e.g. most of the published studies on palliative radiotherapy focused on the effect of different fractionation regimens and total radiation doses [2]. In doing so, these studies primarily reflect the perspective of one oncological subdiscipline, namely radiation oncology or orthopedic surgery. However, they did not utilize control groups of patients with metastases at the same site who were not radiated

* Corresponding author at: Cantonal Hospital Winterthur, Department of Gynecology & Obstetrics, Brauerstrasse 15, CH-8401 Winterthur, Switzerland. Tel.: +41 52 2662713; fax: +41 52 2664512.

E-mail address: uwe.gueth@unibas.ch (U. Güth).

or operated, nor take into account how these procedures were embedded in the overall course of distant metastatic disease (DMD).

In this study, we applied a more general approach along these lines, which has previously been used only in few reports in the literature [8]. Based on a prospective BC database including all newly diagnosed BC cases at a large Swiss breast center over a 20-year period, we aimed to give a comprehensive overview regarding the frequency of BM and systematically evaluated how the non-systemic BM-related therapy options radiotherapy and surgery were actually clinically implemented in an unselected cohort of patients with DMD. We use the term non-systemic locoregional therapy to draw a clear distinction between radiotherapy/surgery and systemic bone-targeted agents such as bisphosphonates and denosumab. By doing so, we answer basic questions such as “How many BC patients with BM can be expected to receive BM-related radiotherapy and/or surgery during their palliative disease courses, at which metastatic sites, at what age, and in which phase of the disease course?”

2. Patients and methods

Data from the prospective relational Basel Breast Cancer Database (BBCD), which includes all newly diagnosed primary invasive BC cases treated at the University Women's Hospital Basel, Switzerland since 1990, provided the basis for this study. This institution comprises the largest breast center in the canton of Basel and is representative of the population of the region. For this study, data from all female patients who were diagnosed with BC up to and including 2009 was analyzed ($n=1459$).

During this 20-year period, 92 patients (6.3%) had DMD at initial diagnosis, or in other words, had primary metastatic disease (PMD). In 2011, with the exception of 37 patients (2.5% of the entire study group) who were lost to follow-up after a median follow-up time of 36 months (range 1–166 months), outcome information was available for all patients recorded in the BBCD. As of March 2011, 277 patients (20.3% of all patients who had stages I–III disease at initial BC diagnosis) had developed distant metastases over time, in other words, had secondary metastatic disease (SMD). The median time between initial BC diagnosis and first diagnosis of DMD was 38.5 months (range: 2–215 months).

Out of 369 patients with confirmed distant metastatic BC, we were able to obtain information regarding the time of diagnosis of metastatic disease and date of death but we did not have complete information about the disease course and palliative therapy details for six patients (PMD, $n=1$; SMD, $n=5$). Thus, these patients were not considered for analysis, and ultimately 363 patients were included in the study.

The patients in this cohort were followed until death. Patients who remained alive were followed until 2013, thus all surviving patients had a follow-up time of at least 24 months. The outcome status of the cohort ($n=363$) was as follows: (1) died of metastatic BC: 316 patients (87.1%); (2) died of other causes: 24 patients (6.6%); (3) alive with metastatic disease: 20 patients (5.5%); and (4) alive, no evidence of disease: 3 patients (0.8%).

In order to analyze patterns of distant metastatic disease and to examine metastatic BM-related radiation oncology and surgical procedures during the palliative therapy course, we examined only the 340 patients who ultimately died of their metastatic disease (PMD, $n=78$; SMD, $n=262$). In other words, we analyzed only completed disease and treatment courses.

2.1. Bone metastases within metastatic patterns

We evaluated six metastatic sites: (1) bone, (2) liver, (3) lung, (4) brain, (5) lymph nodes (not including ipsilateral BC-related locoregional lymph nodes), and (6) other anatomical sites.

For each case, the location of the metastatic lesions and the number of metastatic sites were recorded. In all cases, this constellation was described at the initial diagnosis of DMD (first DMD event). When additional metastatic lesions subsequently developed at other locations, the new metastatic site was described as the “second DMD event”. As an example, a patient was diagnosed with DMD, consisting of bone and liver metastases, in June 2005. This was recorded as two metastatic sites at the “first DMD event”. Palliative therapy was initiated. In August 2007, the disease progressed and additional lung metastases were found. This was recorded as one site for the “second DMD event”. In this particular case, we recorded two DMD events, a total of three metastatic sites and a time of 13 months between the first and second DMD event. When metastatic lesions developed in different locations or regions within an organ or organ system (e.g. isolated BM of the spine at the first diagnosis of DMD and several months later additional femoral metastases), these were not considered as separate DMD events.

Usually, the lesions of the first and second DMD events reliably reflect the course of DMD and determine the disease course and palliative therapy administered (in only two cases, there was a clinically relevant metastatic site at a third DMD event: in both cases, the patients developed brain metastases). Additional development of metastatic lesions might occur in some late palliative stages but since palliative care and diagnostic work-up in this situation vary considerably depending on the individual situation, the recording of a third DMD event would not be expected to provide clinically meaningful information. Table 1 lists the distribution of metastatic locations of the study cohort.

Table 1
Patterns of distant metastatic sites in 340 patients.

Metastatic sites	DMD event 1 Patients, $n=340$ (%) Metastatic sites, $n=570$	DMD event 2 Patients, $n=164$ (%) Metastatic sites, $n=210$	All DMD events ^a Patients, $n=340$ (%) Metastatic sites, $n=782$
Bone	209 (61.5)	28 (17.1)	237 (69.7)
Lung	128 (37.6)	47 (28.7)	175 (51.5)
Liver	89 (26.2)	60 (36.6)	149 (43.8)
Brain	24 (7.1)	38 (23.2)	64 (18.8)1
Lymph nodes (excluding ipsi-lateral locoregional LNs)	85 (25.0)	12 (7.3)	97 (28.5)
Other locations	35 (10.3)	25 (15.2)	60 (17.6)
One metastatic site at diagnosis of DMD	188 (55.2)		
One metastatic site at diagnosis of DMD: bone metastases only	96 (28.2)		

DMD: distant metastatic disease; LN: lymph node.

^a Additionally included: two patients with brain metastases at a third DMD event.

Download English Version:

<https://daneshyari.com/en/article/2136207>

Download Persian Version:

<https://daneshyari.com/article/2136207>

[Daneshyari.com](https://daneshyari.com)