

Case Report

A 16 Year Survival of a Patient after Mastectomy Due to Breast Cancer with Metastases to Bones, Currently Treated for Loosening of Tumor Prosthesis

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- Chemotherapy
- Loosening

Abstract

Progress in oncology diagnostics and treatment results in systematic increase of survival rates in cancer. In women, the most common primary site of a neoplasm that metastasizes to bones is breast cancer and most commonly affected bone is proximal femur. This results in local weakening of the bone structure and, as a consequence, to pathological fractures that impairs the quality of life and may shorten the patient survival. However, if they are detected at an appropriately early stage, they can be treated much more successfully than other metastases. Well planned intervention of an orthopedic surgeon can prevent such fracture if the risk is diagnosed at an appropriately early stage. Surgical treatment of metastatic lesions is considered as palliative treatment and life expectancy is one of the criteria considered while selecting the treatment method. The selection of an implant and type of intervention will have their effects for many years, just as in patients receiving radical treatment. In summary, treatment of metastases limited to the femur/hip after a radical treatment of the breast cancer with good prognostic factors should be radical with curative intent. Resection of the metastatic tumor with a margin of healthy tissues and using an implant that provides an optimal perspective of long-term preservation of the extremity function and comfortable life should be a goal.

ABBREVIATIONS

CMF chemotherapy: Cyclophosphamide Methotrexate Fluorouracil; ER receptor: Estrogen Receptors; PGR: Progesterone Receptor; HER2 receptor: Human Epidermal Growth Factor Receptor 2; GCDFFP-15: Gross Cystic Disease Fluid Protein-15; AT chemotherapy: Doxorubicin and Docetaxel; PET: Positron Emission Tomography

INTRODUCTION

Progress in oncology diagnostics and treatment results in systematic increase of survival rates in cancer. As a result, more and more patients with metastatic disease, and in particular with skeletal metastases, visit outpatient clinics of orthopedic surgeons [1]. In women, the most common primary site of a neoplasm that metastasizes to bones is breast cancer. Autopsy revealed skeletal metastases in approximately 70% of patients previously treated for breast cancer [2-4]. The most common location of metastases is a proximal femur [1]. This results in local weakening of the bone structure - osteolysis, the weakening of its bearing strength and, as a consequence, to pathological fractures that impair the quality of life of patients and, through immobilization, can result in complications and shorten the patient survival [2]. However, if they are detected at an appropriately early stage, they can be treated much more successfully than other metastases, not

only resulting in elimination of complaints, but also essentially stopping the disease progression. Well planned intervention of an orthopedic surgeon can prevent such fracture if the risk is diagnosed at an appropriately early stage. Nevertheless, if the fracture does occur, adequate treatment allows for rapid patient mobilization and avoidance of remote complications. However, it carries a risk of postoperative complications. Surgical treatment of metastatic lesions is considered as palliative treatment and life expectancy is one of the criteria considered while selecting the treatment method. However, due to increasing life expectancy of patients treated for cancer and progress in the evaluation of prognosis, increasingly common, the selection of an implant and type of intervention will have their effects for many years. So the treatment decision an orthopaedic surgeon has to take is not limited to simple palliation any more but rather a radical treatment ['curative intention'] will be considered in steadily growing number of patients.

We present a case of a female patient who had been diagnosed with cancer of her left breast 34 years earlier, stage T1N1, who had received radical surgical treatment with subsequent radio- and chemotherapy. Nine years later, metastases to the proximal end of the left femur were diagnosed. Resections of the metastatic tumor, with complete tumor prosthesis of the left hip joint were performed. In April 2017, at our center, the prosthesis was replaced by other type of tumor prosthesis due to loosening of

both components of the prosthesis. Intraoperative histopathology investigation did not detect any neoplastic changes.

CASE PRESENTATION

A 72-year-old woman with metastatic cancer of the left breast was admitted to our hospital to undergo surgical treatment due to loosening of both components of the prosthesis of the left hip endoprosthesis (Figure 1).

The patient was diagnosed with breast cancer at the age of 38 years. Histopathology report stated: 'Moderately differentiated infiltrating duct carcinoma with evidence of vascular infiltration'. She was qualified for surgical treatment. Modified Patey's mastectomy was performed and subsequently radiotherapy 50Gy was given over 5 weeks [5 fractions per week – 2 Gy each fraction], and 6 cycles of chemotherapy CMF regimen were given. The disease stage was T1N1b M0 with metastases in 4 of 24 lymph nodes and 2 of 4 exhibited evidence of capsular infiltration in the intraoperative specimens. Positive estrogen receptors were found. 18 years later, a metastasis to the head of the left femur was found. The tumor was resected and a cemented PSO endoprosthesis of the hip joint was implanted. In metastatic lesion, positive estrogen receptors were found. Subsequently, tamoxifen was given. In December 2014, PET detected cancer metastases to bones and mediastinal lymph nodes. Hormonal therapy was given, exemestan + fulvertran [500 mg every 28 days], and subsequently vinorelbine [60 mg every 7 days] and capecitabine [2300 mg once daily for 14 days every 21 days]. A follow-up PET imaging of September 2016 revealed progression of previously detected lesions and appearance of new metabolically active lesions. Radical irradiation of the frontal bone and dens of the axis was given, for a total dose of 30 Gy in 10 fractions with 3 Gy each fraction and on the C7-Th1 vertebral area using fractionated dose for a total dose of 30 Gy in 10 fractions with 3 Gy each fraction. Subsequently oral Endoxan was given. In January 2017, the patient sustained injury of the left hip as a result of a fall. After a diagnostics workup was performed, loosening of the endoprosthesis stem and cup was diagnosed. The patient was qualified for surgical treatment. In April 2017, re-alloplasty of the left hip joint was performed with implantation of PE Snap on a bone cement and Hyperion stem with a ceramic head (Figure 2).

DISCUSSION

Breast cancer is the most commonly diagnosed malignancy in women and the most commonly diagnosed primary site for skeletal metastases [1-4]. The most common location of metastases is long bones of the lower extremity [3]. The treatment of diagnosed metastases depends on the prognosis, apart from location and extent of the lesion. Progress in diagnostics and treatment protocols results in gradual increase of average survival [5]. Positive prognostic factors in patients with metastatic breast cancer include: long interval between the initial treatment and appearance of metastases, location of the metastases limited to the skeletal system and positive ER status as well as a history of adjuvant therapy and anti resorptive therapy [5]. Isolated skeletal metastases are believed to be more common in lobular carcinoma as opposed to invasive ductal carcinoma that more commonly results in metastases in the internal organs

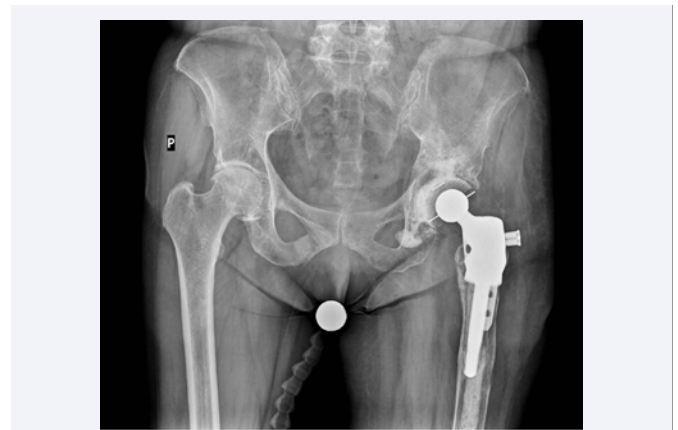


Figure 1 X-ray image before revision of loosened tumor prosthesis (PSO).



Figure 2 X ray after revision. PeCup / Hyperionrevisionstem.

[6]. Similarly, higher risk of involvement of internal organs occurs in estrogen and progesterone receptor negative [ER, PR negative] and HER2-positive tumors [6]. There are reports indicating that the risk of breast cancer metastases decreases with age at which the primary disease is diagnosed [6]. When skeletal metastases have been diagnosed, radical tumor resection with a margin of healthy tissues improves prognosis [7].

In conclusion, we analyzed a case of a woman with currently 34-year survival in a locally advanced breast cancer diagnosed at the age of 38 years, who was treated with modified Patey's mastectomy with subsequent radio- and chemotherapy. 18 years after primary diagnosis, patient developed metastatic disease, initially limited to the head of the femur. Radical therapy was provided, with complete resection of the metastatic lesion and implantation of a total cemented endoprosthesis of the hip joint. 16 years after the prosthesis implantation due to the metastasis, as a result of a fall, both components of the endoprosthesis became loosened. Re-alloplasty was performed and the endoprosthesis was replaced by the tumor prosthesis. Intraoperative histopathology investigation did not detect any neoplastic changes. In summary, treatment of metastases limited to the femur/hip after a radical treatment of the breast cancer

with good prognostic factors should be radical with curative intent. Resection of the metastatic tumor with a margin of healthy tissues and using an implant that provides an optimal perspective of long-term preservation of the extremity function and comfortable life. In this specific case, cancer did not overcome the patient.

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