

ORIGINAL ARTICLE

**Surgical treatment in bone metastases in the
appendicular skeleton**☆



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KEYWORDS

Bone metastases;
Pathological fracture;
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Abstract

Introduction: Metastatic bone disease is the most common neoplastic process that affects the skeletal system. Eighty percent of bone metastases come from carcinomas of the breast, lung, kidney, thyroid and prostate. The Katagiri scale enables an estimation of the survival of patients based on the presence or absence of visceral metastases, multiple bone metastases and functional status according to the ECOG scale.

Material and methods: A retrospective, descriptive and observational study conducted between March 1, 2013 and June 30, 2015. Thirty-two patients were studied with a diagnosis of metastatic bone disease and who had undergone some type of orthopaedic surgical treatment for pathological fracture or impending fracture.

Results: 28 cases (87.5%) presented pathological fracture and 4 cases (12.5%) impending fracture according to the Mirels score. Fifteen cases (46.875%) were treated by placing a central medullary nail + spacer in the long bone diaphysis, 15 cases (46.875%) with modular arthroplasties and 2 patients (6.25%) with forequarter amputation. Eleven patients (34.375%) died during the course of this study, all with a Katagiri greater than or equal to 4.

Discussion: The presence of a fracture in previously damaged territory is a catastrophic complication for most cancer patients. A clear understanding of the life expectancy of patients with bone metastases is of great help to prevent errors and failures in treatment.

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PALABRAS CLAVE

Metástasis óseas;
Fractura patológica;
Lesiones líticas

Tratamiento quirúrgico de las metástasis óseas en el esqueleto apendicular**Resumen**

Introducción: La enfermedad ósea metastásica es el proceso neoplásico más común que afecta al sistema esquelético. El 80% de las metástasis óseas están dadas por los carcinomas de mama, pulmón, riñón, tiroides y próstata. La escala de Katagiri permite hacer una estimación de la supervivencia de los pacientes con base en la presencia o ausencia de metástasis viscerales, múltiples metástasis óseas y el estado funcional.

Material y métodos: Estudio retrospectivo, descriptivo y observacional realizado entre el 1 de marzo del 2013 y el 30 de junio del 2015 en donde se estudió a 32 pacientes con diagnóstico de enfermedad ósea metastásica a los que se les realizó algún tipo de tratamiento quirúrgico ortopédico por fractura patológica o inminencia de fractura.

Resultados: Veintiocho casos (87,5%) presentaron fractura patológica y 4 casos (12,5%) con inminencia de fractura de acuerdo con el score de Mirel; 15 casos (46,875%) fueron tratados mediante colocación de clavo centromedular + espaciador diafisario en huesos largos, 15 casos (46,875%) con artroplastias modulares y 2 pacientes (6,25%) desarticulación glenohumeral. Once pacientes (34,375%) fallecieron durante el transcurso de este estudio, todos ellos con un Katagiri igual o mayor de 4.

Discusión: La presencia de una fractura patológica es una complicación catastrófica para la mayoría de los pacientes con cáncer. Un claro entendimiento de la expectativa de vida de los pacientes con metástasis óseas es de gran ayuda para prevenir errores y fallas en el tratamiento. © 2018 SECOT. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

Introduction

The life expectancy of oncological patients has increased due to progress in chemotherapy and radiotherapy, improvements in surgical techniques and the development of new cancer treatments. Due to this the incidence of bone metastasis has also increased.¹⁻³

Bone is the third most common site for metastatic disease, after the lungs and liver.^{1,2,4} Metastatic disease in the bone is the most common neoplastic process that affects the skeleton.⁵ Eighty per cent of bone metastases arise due to carcinomas of the breast, lungs, kidney, thyroid and prostate.⁵

Metastatic destruction reduces the load-bearing capacity of bone, initially causing trabecular disruption, microfractures and then the loss of bone continuity.²

The most frequent symptom is pain, which may be incapacitating, localised or diffuse, and it may or may not be associated with the presence of a fracture in a previously damaged area.³ Metastatic bone disease is considered to be the greatest contributor to deterioration of the quality of life of patients with cancer.^{1,2,4}

Of the different forms of treatment, non-surgical methods are usually insufficient as they reduce patient quality of life and are associated with a higher probability of fracture non-consolidation.^{2,6} The surgical treatment of bone metastases is palliative, and it aims to achieve local control of the disease and structural stability, restoring function as quickly as possible.²

There are scales which allow us to take decisions on the best options for management. Katagiri's scale⁷ is one of these, and it makes it possible to estimate patient survival as well as to suggest surgical treatment based on the presence

or absence of visceral metastasis, multiple bone metastasis and functional state according to the ECOG⁸ scale. Mirel's developed a scoring system to predict the risk of fracture in long bones with metastatic disease, so that prophylactic supports could be prepared.⁹ We analyse the functional state of patients after surgery according to the Musculoskeletal Tumour Society scale (MSTS).¹⁰

The aim of this work is to describe the experience in the surgical treatment of bone metastasis in the appendicular skeleton, in the Instituto Nacional de Cancerología, Mexico.

Material and methods

A retrospective, descriptive and observational study was performed during the period from 1 March 2013 to 30 June 2015. It included 32 patients with the diagnosis of metastatic bone disease who were treated with some type of orthopaedic surgery due to pathological fracture or an imminent fracture.⁸ All of them were evaluated prior to surgery using Katagiri's scale,⁷ with a follow-up of at least 6 months after surgery. Patient quality of life was evaluated using the ECOG scale, and their postoperative functional state was evaluated using the MSTS.

Statistical analysis was recorded in a database prior to analysis using version 19.0 of the SPSS for Windows (IBM SPSS Software version 19.0 for Windows, Chicago, IL 60606, USA). Descriptive statistics were produced, with records of averages, standard deviations and a frequencies table. The chi-squared test was used to analyse factors associated with complications, and the odds ratio was used to quantify risk factors. The Kaplan-Meier method was used to evaluate survival, while the Mantel-Cox log rank test was used to

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