

Bone Disease in Mastocytosis



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KEYWORDS

- Mastocytosis • Osteoporosis • Osteosclerosis • Fracture • Bone mineral density
- Bone turnover markers

KEY POINTS

- Systemic mastocytosis often involves bone, mainly as osteoporosis and fragility fractures.
- In patients with otherwise unexplained osteoporosis or fragility fractures, systemic mastocytosis should be ruled out.
- Risk for vertebral fractures is high, especially in men.
- Bone turnover markers and bone mineral density must be evaluated in each patient, and radiographs of the axial skeleton should be performed to screen for vertebral fracture.
- Traditional risk factors for osteoporosis should be corrected.
- Currently bisphosphonates are the first-line pharmacologic treatment of osteoporosis.

EPIDEMIOLOGY

Bone involvement is one of most common expressions of systemic mastocytosis (SM) in adults. The range of clinical pictures is wide: from osteoporosis with fragility fractures and poorly localized bone pain to asymptomatic osteolytic and/or focal sclerotic lesions and diffuse osteosclerosis. Despite the importance of these aspects, it has only been in the last few years that large epidemiologic studies have been published,¹⁻⁷ also supported by ever increasing extensive use of the dual-energy X-ray absorptiometry (DXA) technique, the gold standard for assessing bone mineral density (BMD).⁸

The prevalence of osteoporosis as defined by the World Health Organization (T score, standard deviation [SD] below the mean of young healthy adults less than -2.5)⁸ in SM varies from 8% to 41% (Fig. 1). It must be emphasized that most of these studies included elderly patients, and this could be a possible confounder

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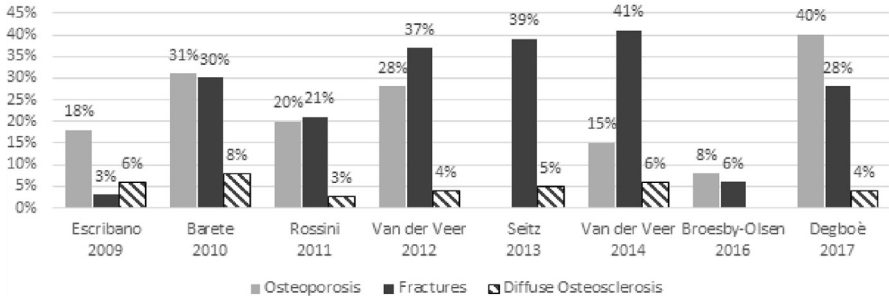


Fig. 1. Prevalence of main bone manifestation in the largest related available studies.

of the real prevalence esteem. Other possible biases could come from data obtained by the health care system, where only clinical evident fractures and osteoporosis were reported,⁷ or from cohorts including a significant proportion of advanced SM (advSM).⁶

The Z score (SD less than the age- and gender-matched mean reference value) is the most appropriate parameter of bone involvement in secondary osteoporosis, as stated by the International Society for Clinical Bone Densitometry.⁹ An inappropriate low bone mass in this case is defined as a Z score lower than -2 .

In the authors' 2011 study on indolent SM (ISM), the prevalence of T scores defined as osteoporosis was 20%, whereas using Z score less than -2 was 9% in women and 28% in men.³ This gender difference has been reported by others,^{1,5} and, interestingly, a study involving men with idiopathic osteoporosis who underwent bone biopsy found a 9% prevalence of SM.¹⁰

The use of Z score helps to correct the above-mentioned confounder, and it changes the proportions, showing a much higher prevalence of inappropriately low BMD in men (Fig. 2 relative to an updated authors' cohort). Data on BMD, a surrogate of bone fragility, confirm data on vertebral fractures that are significantly more prevalent in men than women (20% vs 14%, see Fig. 2), as also reported in other populations.^{1,3,5}

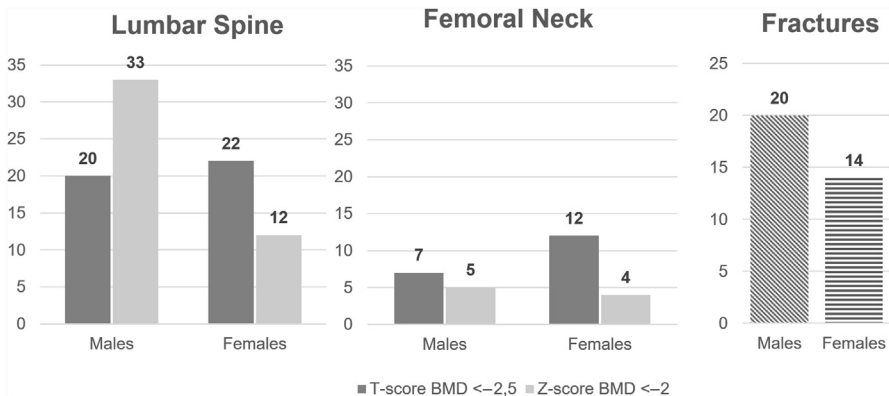


Fig. 2. Prevalence of mastocytosis-related low bone mass, osteoporosis, and fractures according to different criteria in authors' cohort. (Adapted from Rossini M, Zanotti R, Viapiana O, et al. Bone involvement and osteoporosis in mastocytosis. *Immunol Allergy Clin N Am* 2014;34(2):385; with permission.)

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