

Clinical Study

Low clinical relevance of a prevalent vertebral fracture in elderly men—the MrOs Sweden study

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Abstract

BACKGROUND CONTEXT: The epidemiology, the fracture pattern, and the clinical relevance of prevalent vertebral fractures in old men are debated wherefore we set out to clarify these issues.

METHODS: Mister Osteoporosis (MrOs) Sweden is a population-based cohort of community-living men aged 69–81 years that includes 3,014 men. Out of these, 1,453 men underwent a lateral radiograph of the thoracic and lumbar spine of which 1,427 were readable and classified by a radiologist, that is the sample size in this study. The men also answered a questionnaire evaluating back pain and limitation in activities of daily living (ADLs) because of back pain during the preceding 12 months in addition with fracture history and life style.

RESULTS: Fifteen percentage of the men had at least one prevalent vertebral fracture, but only 1/10th of these were aware of their fracture. Among the men with a fracture, 58% had one, 21% two, 9% three, and 11% four or more fractures. In men with only one fracture, 70% of the fractures were located in the thoracic and 30% in the lumbar spine, 85% had a wedge, 13% a biconcave, and 2% a crush-type configuration; one-quarter had a maximum vertebral body compression degree of less than 24% and one-quarter of more than 38%. Among the men with one or several vertebral fracture, 57% reported back pain compared with 55% in those without a fracture ($p=.53$). Most ADL functions were similar in the men with or without a prevalent vertebral fracture. In the men with one fracture, there was no difference in the occurrence of back pain depending on the fractured region ($p=.49$), type of the fracture ($p=.77$), or degree of compression ($p=.85$). In men with one or several fractures, there were no significant differences in the presence of back pain in any ages ($p=.08$), nor there were differences in presence of back pain regarding type ($p=.08$) or number of fractures ($p=.21$).

CONCLUSIONS: A prevalent vertebral fracture is common in old men but has low clinical relevance. There does not seem to be a specific fracture pattern that predisposes for back pain. © 2015 Elsevier Inc. All rights reserved.

Keywords:

Vertebral fracture; Vertebrae; Back pain; Old men; Population-based cross-sectional study; MrOsstudy

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EVIDENCE & METHODS

Context

While the association between osteoporosis, senile compression fractures and elderly women is well known, the prevalence of vertebral fractures in elderly men is not as well understood. The authors set out to examine the epidemiology of vertebral fractures in a cohort of community-living elderly Swedish men.

Contribution

The study included 1,427 individuals evaluated using radiographic techniques. Of these, 15% were found to have one or more vertebral fractures. The incidence of back pain was not higher among those with vertebral fractures and most ADL functions were comparable to the control group without vertebral fractures.

Implications

This study is essentially a cross-sectional analysis, meaning it is unable to comment on the longitudinal effects (on health or physical function) of the fractures identified. There is also the potential for recall bias, as the study used questionnaires asking participants to rate their performance as far back as a year prior to the survey. As this study was conducted among Swedish men, cultural and socio-ethnic characteristics unique to that population could limit the reproducibility of findings among more diverse populations, or those of substantially different ethno-cultural backgrounds.

—The Editors

Introduction

The number of vertebral fractures has increased during recent decades; probably, because it gradually becomes a larger and larger proportion of old individuals in society and because age is correlated to osteoporosis, there will be a higher prevalence of osteoporosis in community [1]. An acute vertebral fracture is associated with increased morbidity and mortality [2–5] and is an important marker for future fracture risk [6]. But the general clinical relevance of a prevalent fracture is debated. The 10-year fracture probability for radiographic vertebral fracture increases in men from 3% at the age of 50 years to 8% at 85 years and in women from 7% to 27% in the same ages [4]. The European Vertebral Osteoporosis Study suggests that 12% of men and women aged 50–80 years have a radiographic vertebral fracture, with higher prevalence found in higher ages [7]. Other reports support an increasing prevalence by aging in both genders [8–10]. However, although the prevalence seems to be higher in young adult men than in young adult women [11], incident fractures are more common in old women than in old men

[7,12,13]. The fracture epidemiology in men is uncertain as the majority of prevalence and incidence studies have been undertaken in women [14,15] and only few in men have been population based [11,16].

For vertebral fractures, it is important to distinguish between clinical and radiographic vertebral fractures as only 25% to 33% of individuals with a radiographic vertebral fracture seek medical attention at the time of the fracture [11,17,18] and only 40% of postmenopausal women with a radiographic vertebral fracture seem aware of their fracture [19]. If the same applies to men it has to our best knowledge not been evaluated. In a patient with acute trauma, acute back pain, and a spine radiograph with an acute fracture, a causal relationship seems probable [11]. But, in those many patients with long-standing back pain and a prevalent radiographic vertebral fracture, it is difficult to determine if the fracture is new or old and its relevance to the clinical symptoms.

The aims of this study were therefore to, in a population-based cohort of community-living old men, determine vertebral fracture epidemiology, compare fracture prevalence of today with the older published data, estimate the clinical relevance of prevalent vertebral fractures, and evaluate if any specific fracture pattern is associated to back pain.

Materials and methods

Mister Osteoporosis (MrOs) Sweden is a prospective multicentre observational study including 3,014 men aged 69–81 years recruited at the medical centers in Gothenburg (n=1,010), Malmö (n=1,005), and Uppsala (n=999) with the primary aim to prospectively evaluate risk factors for osteoporosis and fractures, the study in detail described previously [20,21]. The men were randomly selected from the national population register, that is they had to be registered in the national Swedish files with a contact address, had to be able to walk without assistance, and could not have bilateral hip replacements to be eligible for participation. The included men were then addressed by a letter that included a prepaid response letter where they had to answer if they wanted to participate, that is so they did not have to have a phone, and with this approach, we achieved an attendance rate of 45%.

At baseline, all participants answered a questionnaire including fracture history, life style, and clinical symptoms with special reference to back pain history and limitations in activities of daily living (ADLs) because of back pain during the preceding 12 months (Table 1). Back pain was defined as pain in the thoracic or lumbar region and disability in ADL because of back pain by asking if the men because of back pain had difficulties in bending down, lifting a 5-kg object, reaching objects above the head, putting socks on either foot, getting in and out of a car, standing or walking more than 2 hours, and sitting in a chair for 30 minutes. Back pain was assessed in terms of a general

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