



CLINICAL VERTEBRAL FRACTURES

INCIDENCE AND DEPENDENCY ON AGE AND GENDER

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Introduction

Vertebral fractures are the most common complication of osteoporosis. They are associated with reductions in quality of life. Current studies concerning the incidence of vertebral fractures are rare in Europe. The identification is difficult, because they are often asymptomatic. Knowledge about age and sex dependency of these fractures could help focussing therapeutic decisions. Therefore we performed a prospective study in an adult German population in order to find a reliable incidence of clinical vertebral fractures in an adult population.

Methods

The whole adult population (age ≥ 20 years) of Rostock, a city in the north eastern part of Germany (173.839 adult inhabitants) was investigated. All patients with radiologically confirmed clinical vertebral fractures were included. The time of observation was April 2014 until March 2015. All medical institutions of the city were involved. Clinical symptoms (backpain, trauma) were radiologically adjudicated at the same time. Only fractures of the thoracic and the lumbar spine were analysed. Each fracture was counted only one time.

Results

A total number of **108,1/100.000 new vertebral fractures** was found. **Women (133,8/100.000)** developed more fractures than **men (80,8/100.000)**. The **middle age** of all people with spinal fractures was **73,4 \pm 13,0 years**. On average, female patients were six years older.

The number of fractures increased with the age of patients. Below the age of 59 years significant more men than women developed fractures ($p < 0,05$). [FIG. 1]

The following reasons for fractures were found: **Osteoporosis** was known anamnestically only **in 48,9%**. The most frequent causes of osteoporotic vertebral fractures were falls (53,2%). Nearly the same percentage of fractures (46,8%) occurred spontaneously without osteoporosis. [FIG. 2]

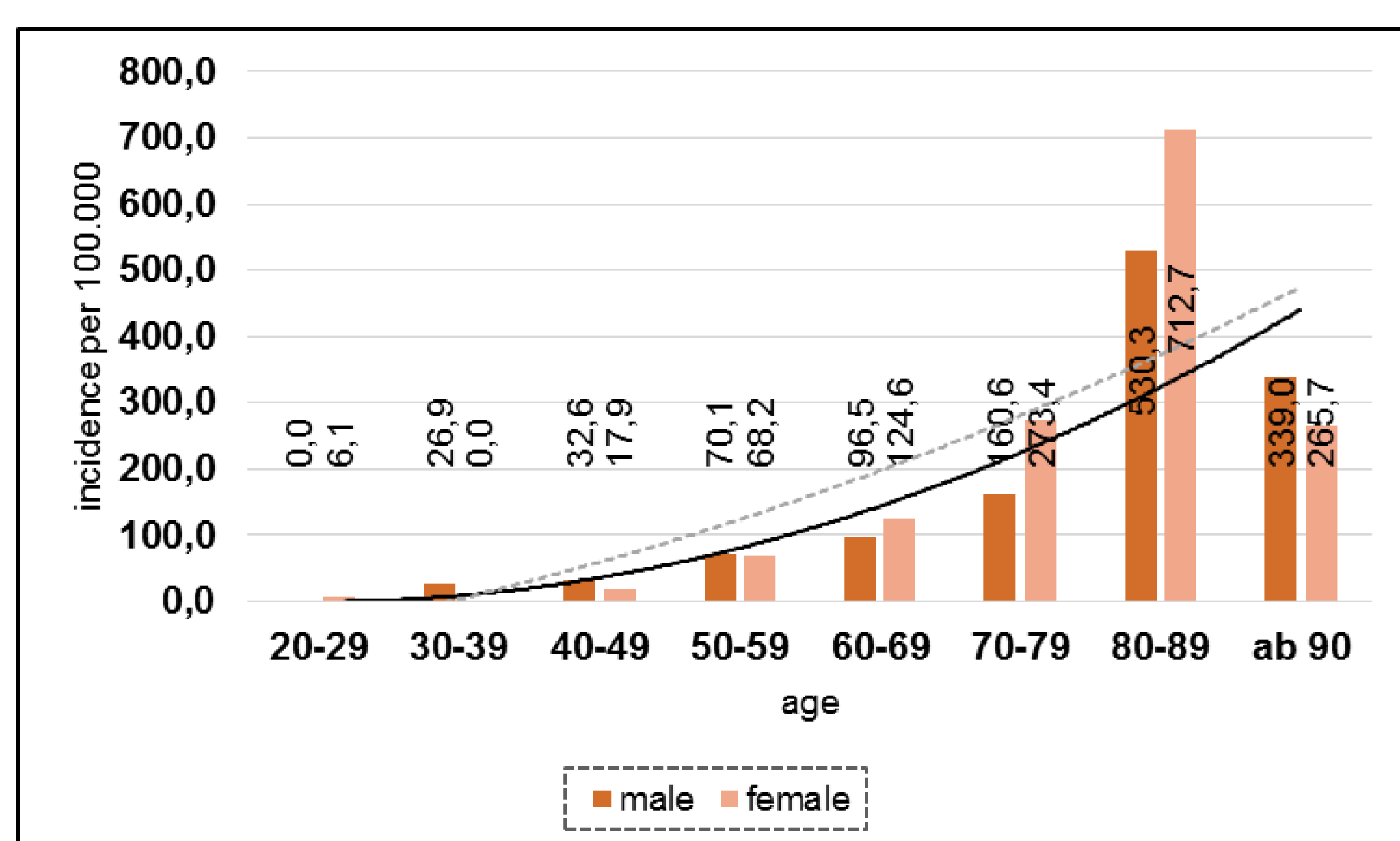


FIG. 1: Incidence of vertebral fractures depending on gender and age

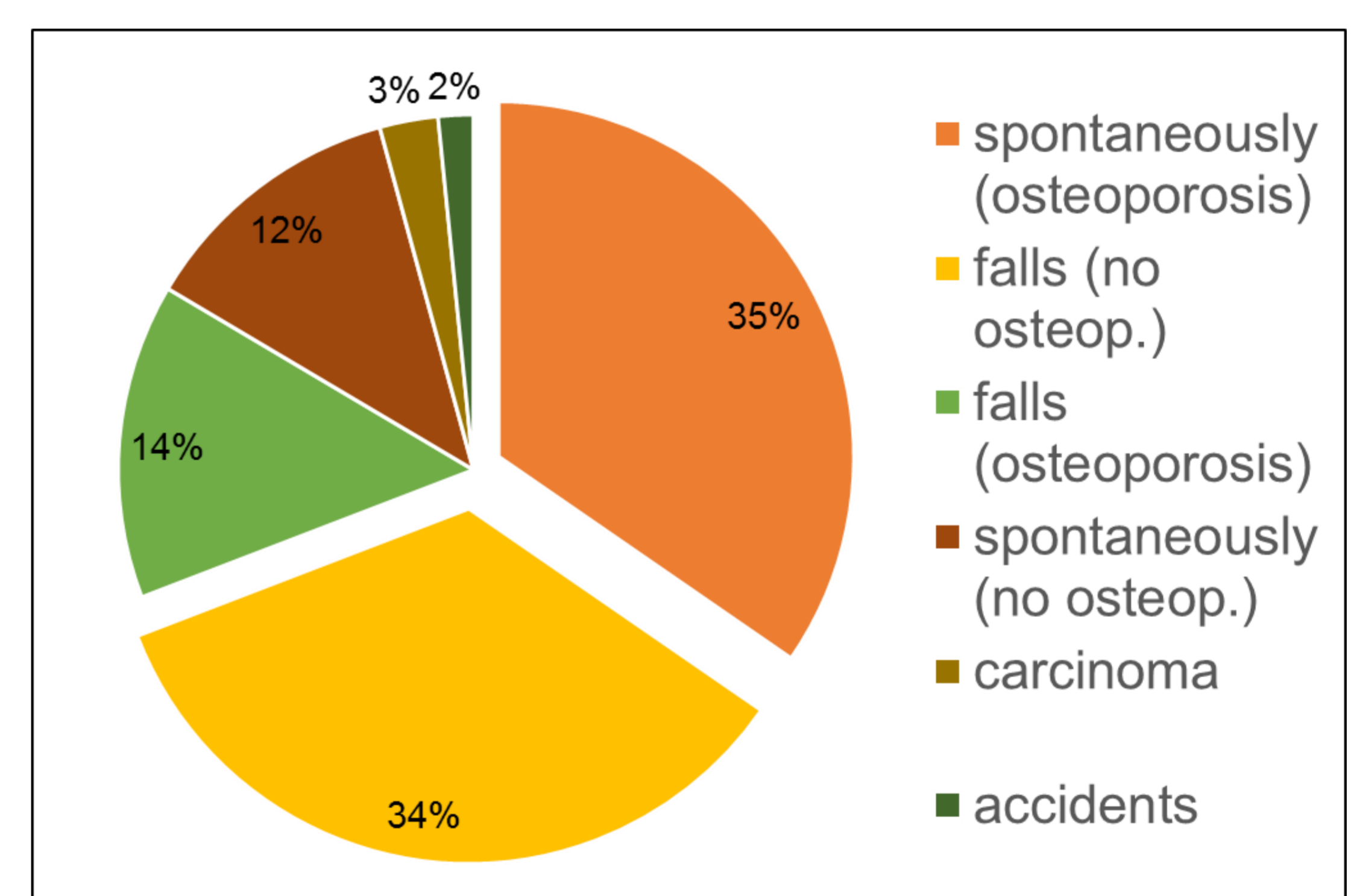


FIG. 2: Causes of vertebral fractures

Discussion

There is one comparable prospective study in Europe (**EPOS**), whose incidences were nearly eight times as high as our results. EPOS observed a selected population of voluntary participants. A new fracture was defined by a high reduction of the vertebral body comparing radiography after periods of time. [1]

In contrast to EPOS, our study involved cases, which were confirmed as true clinical vertebral fractures and we observed the whole unselected adult population of Rostock. Another current German study was done in the south-eastern city of Jena. Lehmann *et al.* published an vertebral fracture incidence of 116,1/100.000. Methods and results are comparable. [2]

Using **FRAX** (WHO Fracture Risk Assessment Tool) all patients had to be treated. Women, 80-89 years, with known osteoporosis were analysed to have a 10-year risk for major osteoporotic fracture by 22%. In contrast to FRAX, our calculated vertebral fracture risk, based on the highest incidence, was 4% (women, 80-89 years, with osteoporosis). Concerning vertebral fractures as the most common osteoporotic complication, FRAX may overestimate fracture risk.

Female gender and older age are associated with high fracture incidence. Falls are relevant independent risk factors.

Focussing on these risk factors may improve treatment results.

Conflict of Interest: There are no conflict of interest.

References:

- [1] Felsenberg, D.; Cooper, C.; O'Neill, T. et al.: Incidence of vertebral fracture in europe: results from the [...] (EPOS), Oxford 2002, J Bone Miner Res
[2] Lehmann, G. *et al.*: Inzidenz und Komplikationen osteoporotischer Frakturen in Jena/Thüringen, Osteologie 2016; 25:7-11

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