Newsletter GISMO

Comitato Editoriale

Anno VIII – Numero XXV – 2020

INDICE

DIFFERENT BASELINE PROFILE OF RISK OF FRACTURE IN PATIENTS TREATED WITH ANTI-OSTEOPOROTIC DRUGS IN REAL-LIFE

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Background:
Real-life superiority of teriparatide and denosumab over oral bisphosphonates in reducing fragility fractures incidence is still unclear, possibly in relation to different profile of risk of fracture of the treated patients. In the present study, we seek to investigate the profile of risk of fracture in patients that started treatment with different anti-osteoporotic medications.

Methods:
We retrospectively analyzed the 10-year risk of major osteoporotic fracture calculated with the DeFRA tool in post-menopausal women aged over 50 years that were initiating an anti-osteoporotic treatment from 2010 to 2017. We enrolled women seen at the osteoporosis outpatient clinic of 10 medical centers in Italy that were prescribed with an anti-osteoporotic treatment. Patients with incomplete collection of data were excluded from analysis. DeFRA is a web based, open source, FRAX™ derived tool to assess the 10-year risk of fracture. DeFRA was shown to better define the individual absolute risk of fracture by including into the algorithm graduated variables instead of dichotomous variables.

Results:
We retrieved data for 12,040womenprescribed with an anti-osteoporotic treatment. In **Figure 1**shows the mean 10-year fracture risk estimated with DeFRA tool at the time of the treatment initiation. Teriparatide users had the highest 10-year risk of fracture (82.1% Standard Deviation [SD] 66.5%). We found that in 2,247 patients that were starting denosumab, the 10-year baseline risk of fracture (54.3%, SD 46.5%) was significantly greater than in 7,288 patients initiating alendronate (24.9%, SD 34.6%) and in patients initiating risedronate (23.9%, SD 24.1%). Patients starting zoledronic acid had similar 10-year risk of fracture to denosumab (47.0%, SD 42.0). P values between oral bisphosphonates, zoledronic acid, denosumab and teriparatide were <0.01. Similar results were found for 10-year risk of femoral fracture (data not shown).

Conclusions:
Teriparatide, denosumab and zoledronic acidare prescribed to patients with greater risk of fracture, that are more likely to experience a bone fracture, for this reason the treatment effectiveness of these medications might be not comparable with other anti-osteoporotic medications.In the future, comparative studieson the effectiveness of various anti-osteoporotic medication should consider the different risk of fracture profiles. An accurate, integrated, assessment of risk factors is recommended.

Figure 1. Mean 10-year risk of fracture estimated with DeFRA tool at the time of treatment initiation, * p< 0.01