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FRACTURE OCCURANCE IN PATIENTS WITH OSTEOPENIA
THE SEARCH FOR A NEW TREATMENT THRESHOLD

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Objectives:

According to current recommendations pharmacological intervention to prevent fractures starts at a T-Score below -2.5 standard deviation (SD).
Our retrospective analysis focussed on the prevalence of fractures in patients with osteopenic T-scores.

Material and Methods:

1180 DXA scans (L1-L4, total hip) were retrospectively analyzed over a period of eight months at our department. 57.1% of our patients had a T-score ≤ -2.5 SD, 35.6% had a T-score between -1and -2.5 SD and 7.3% had non-osteoporotic T-score values. The osteopenic subgroup included 188 caucasion pre- and postmenopausal women and men with An age between 20 and 92 years. Vertebral fractures were identified by lateral X-ray examinations of lumbar spine. Statistical evaluation was performed by Mann-Whitney U-tests or Chi-square tests. A p-value ≤ 0,05 was considered as statisticslly significant.

Results:

Gender distribution between the subgroup was 85% female and 15% male. Mean age was 64.9 ± 17.05 years. The mean T-score showed moderate osteopenic values at lumbar spine (-1.26 ± 0.95) and total hip (-1.66 ± 0.36). 34% of the patients had concomitant oral medication with calcium, 28% had additional oral bisphosphonates, but 22% had no osteotropic medication (fig 1).

34 %	Calcium
28,2 %	Bisphosponates (+ Calcium)
22,3 %	untreated
4,8 %	rhPTH
1,6 %	Strontium Ranelate
1,1 %	Raloxifene
0,5 %	Calcitonin
7,45%	unknown
n = 188	

Fig. 1: Concomitant Mediaction

Fracture analysis revealed 27% vertebral and 8.5% peripheral fractures. 6.4% had fractures at both sites.
Fractures most significantly occurred in the sixth and seventh decade of life (p<0.0005). The mean age of these patients was 72.0 ± 9.99 years, thus about ten years higher than at these without fractures (61.4 ± 18.7) with a significant p-value (p = 0.0004) (fig 2).

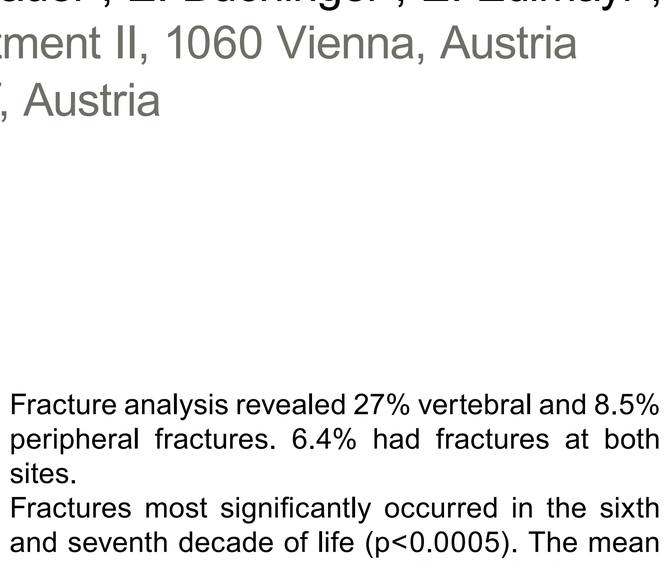

Fig. 2: Vertebral fractures age

Primary diseases such as chronic inflammatory bowel disease, eating disorder (e.g. anorexia or bulimia) or chronic back pain (p=0.0008) (fig 3) and increased BMI (26.37 vs 23.06; p=0.000022) had influence on the incidence of vertebral fractures (fig 4).

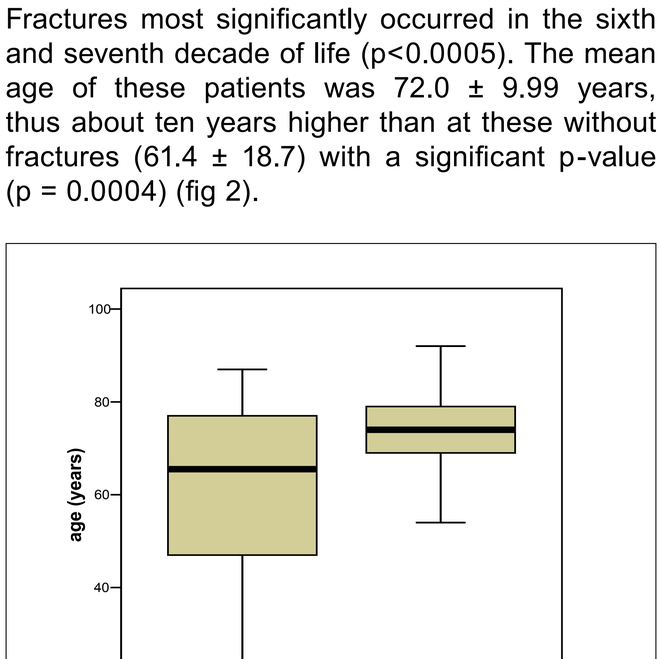

Fig. 3: Influence of contributing disease an vertebral fractures

BMI	Fracture	No Fracture
Mean	26,37	23,06
S.D.	4,59	4,70
Median	25,70	23,00
L. Quartile	22,90	20,30
U. Quartile	29,30	26,28
Minimum	19,30	12,50
Maximum	38,10	44,80
Number	64	124

p = 0,000022

Fig. 4: Influence of Body mass index (BMI) on fractures

Analysis of BMD of women already revealed fractures at osteopenic T-scores (fig 5).

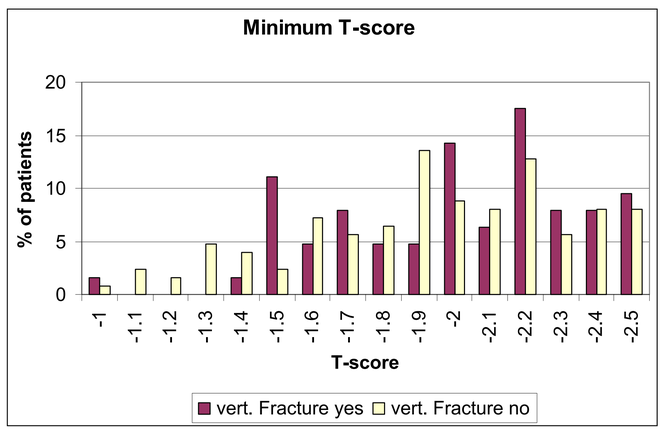

Fig. 5: Analysis of T-scores at women with vertebral fractures

Conclusion:

Co-existing risk factors such as age, sex and prevalent adult fractures must be assessed to estimate the fracture risk of the individual osteopenic patient. The influence of BMI on fractures still remains controversial.
Taking into account the above mentioned results the redefinition of the intervention threshold for the begin of an antiresorptive or osteoinductive therapy will be a major target for the future to reduce the fracture risk for the individual patient.