EFFECTS OF CHOLECALCIFEROL AND CALCIFEDIOL IN OSTEOPOROTIC WOMEN WITH SECONDARY HYPERPARATHYROIDISM DUE TO SEVERE VITAMIN D DEFICIENCY UNDERGOING ZOLEDRONIC ACID TREATMENT: A RANDOMIZED-CONTROLLED TRIAL

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Background: Secondary hyperparathyroidism (sHPTH) due to vitamin D deficiency impairs the bone mineral density (BMD) response to alendronate,1 but the optimal strategy for its correction in postmenopausal osteoporotic women (PMO) about to start zoledronic acid (ZOL) therapy is still unknown.

Objectives: To evaluate the effects of cholecalciferol (D3) and calcitriol (25OHD) on serum 25-OH-vitamin D (s25OHD), parathyroid hormone (PTH) and BMD in PMO presenting with sHPTH due to vitamin D deficiency.

Methods: PMO with s25OHD <20 ng/ml, sHPTH (PTH >65 pg/ml) and BMD T-score at the lumbar spine (LS), femoral neck (FN) or total hip (TH) < -2.5, or between -1.25 and -2.5 plus one vertebral/femoral fracture, were randomly assigned to receive a therapeutic dose of D3 (300 000 IU bolus) followed by 175 mcg/week of D3, or 25OHD alone, 2 months before receiving s25OHD and sHPTH were measured at baseline and after one year from ZOL. Serum calcium, PTH and s25OHD were measured at baseline, and 6- and 12-month after ZOL. Adverse and clinical events were ascertained by 3- and 9-month telephone interviews, and by 6- and 12-month clinical evaluation.

Results: 45 PMO (25OHD N=23, D3 N=22) were enrolled over one year and 32 subjects (mean age ±SD 75±10 years, range 51-91) completed the 1-year treatment/follow-up (25OHD N=17, D3 N=15). Most PMO discontinued for protocol violation, while three deceased before study ending (25OHD N=1, D3 N=2) for reasons not related to the agents investigated. The baseline characteristics were comparable in both groups. At baseline mean s25OHD (±SE) was 9±1 ng/ml in the 25OHD group and 8±1 ng/ml in the D3 group. The corresponding figures for PTH were 111±6 pg/ml (25OHD) and 117±5 pg/ml (D3). Mean s25OHD (±SE) increased in both groups at 6- and 12-month, being significantly greater in the 25OHD group (12-month, 34±2 versus D3 23±1 ng/ml, P<.001) at both time points (Figure 1). PTH (mean ±SE) decreased in both groups, being significantly lower in the 25OHD group at 12-month (25OHD 46±6 pg/ml versus D3 70±6 pg/ml, P=.007), as shown in Figure 1. BMD at the LS, FN and TH increased in both groups with significant increases versus baseline only at the FN without significant differences between s25OHD and D3. In PMO receiving s25OHD serum calcium remained stable over time, while those receiving s25OHD demonstrated a significant increase of serum calcium, with 2 PMO presenting a value close to the upper limit of the reference range at baseline only at the FN) without significant differences between s25OHD and D3. At baseline, mean s25OHD (±SE) was 8±1 ng/ml in both groups. At baseline mean s25OHD (±SE) was 8±1 ng/ml in both groups.

Conclusion: Calcitriol 175 mcg weekly appears more potent in improving similar 25OHD and D3 regimens. Further studies are warranted to clarify implications on BMD improvements on the long-term of therapeutic dose (300'000 IU) plus 175 mcg/week in PMO presenting with sHPTH due to vitamin D deficiency.
Parenteral anti-osteoporotic medications are frequently recommended for the management of primary and secondary osteoporosis by NICE (1) and EULAR (2) guidelines.

Objectives: This audit aimed at evaluating the efficacy, adherence and safety profile of denosumab (D), zoledronate (Z) and teriparatide (T).

Methods: The data of patients initiating D, Z and T from 2012-2021 were retrospectively reviewed using electronic medical records at Basildon hospital.

Results: We enrolled 146 patients diagnosed with low bone density and on following treatment (3-6 years D (n: 50), 4-5 years Z (n: 50) and 2 years T (n: 46). More than 92% were Caucasian females; 41.7% were above 80 years.

T group had more pronounced reduction in bone mineral density (BMD) with a mean T-score (spine: -3.9, hip: -2.6, neck of femur: -2.7; followed by Z group (spine: -2.6, hip: -2, neck of femur: -2.5) and D group (spine: -2.3, hip: -2.2, neck of femur: -2.3).

Primary prevention was in 26% and secondary prevention in 73.9%; with the following treatment (3-6 years D (n: 50), 4-5 years Z (n: 50) and 2 years T (n: 46).

The course of T was stopped earlier in 28.2% of the cases due to the difficulty in prescribing these medications, patient preference and mode of administration. To optimize the adherence and effects of anti-osteoporotic medications, stratified guidelines is required for the long term use of these medications and discontinuation of D.

REFERENCES:

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