

Bone mineralization and hormonal status in Turner syndrome patients: cross sectional one population study



R. Klimaite^{1,2}, R. Krikščiuniene^{1,2}, B. Žilaitiene^{1,2,3}, R. Verkauskiene^{1,2,3}.
¹ Hospital of Lithuanian University of Health Sciences, Kauno klinikos.
² Lithuanian University of Health Sciences
³ Institute of Endocrinology, Lithuanian University of Health Sciences



Introduction

Women with Turner syndrome (TS) are known to be at risk of decreased bone mineral density (dBMD). Sex hormone replacement therapy is crucial to ensure the proper BMD formation, although the dBMD remains a problem in TS.

Aim

To investigate the prevalence of decreased bone mineralization and its association with hormone levels in TS.

Subjects

Women with genetically confirmed TS aged ≥ 18 year.

Methods

There were 53 women with TS enrolled into the prospective study. To assess the BMD dual – energy – X – ray absorptiometry (DEXA) parameters were analysed. BMD was measured in g/cm^2 , Z - score $\leq - 2.0$ SD was defined as dBMD (International Society for Clinical Densitometry guidelines¹). The lowest value of Z-score in the spine or in the neck of femur was included into the analysis. The correlations between BMD and the levels of Testosterone (T), Estradiol (E), Thyroid stimulating hormone (TSH), calcium (Ca), ionized calcium (Ca^{2+}), body mass index (BMI), final height (FH), the duration of E use (DE), were evaluated.

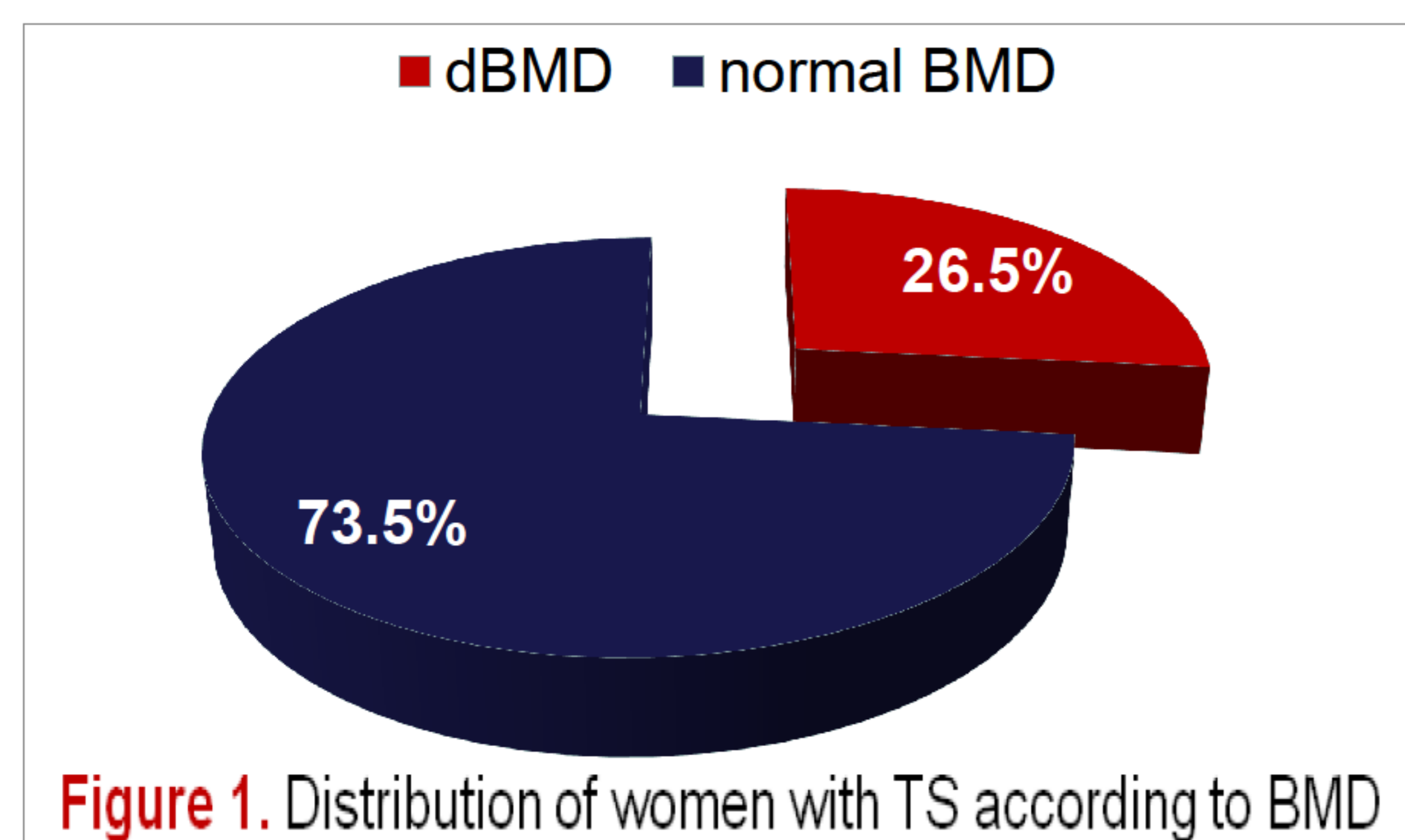
Results

Mean age of participants was 29.06 ± 7.19 year. Mean FH was 152.33 ± 6.21 cm, mean weight 57.19 ± 11.40 kg, mean BMI 24.59 ± 4.82 kg/m^2 , mean BMD was 0.787 ± 0.144 g/cm^2 . dBMD was diagnosed in 26.5 % (n = 13) of TS, normal BMD was found in 73.5 % (n = 36). **Figure 1**

The significant correlation between BMD and BMI was observed ($r = 0.309$, $p = 0.039$). **Figure 2**

The significant negative correlation between DE and Ca ($r = - 0.317$, $p = < 0.05$) was found. **Figure 3**

There was no significant correlation between BMD and T, E, TSH and Ca or Ca^{2+} levels.



Conclusion

Higher BMI was associated with better BMD in TS patients. No relationship between sex hormone, TSH, calcium concentrations and BMD was identified in this study.

References

¹Lewiecki E. M., Binkley N., Morgan S. et al. Best Practices for Dual-Energy X-ray Absorptiometry Measurement and Reporting: International Society for Clinical Densitometry Guidance. Journal of Clinical Densitometry 2016; 19; 127-140.

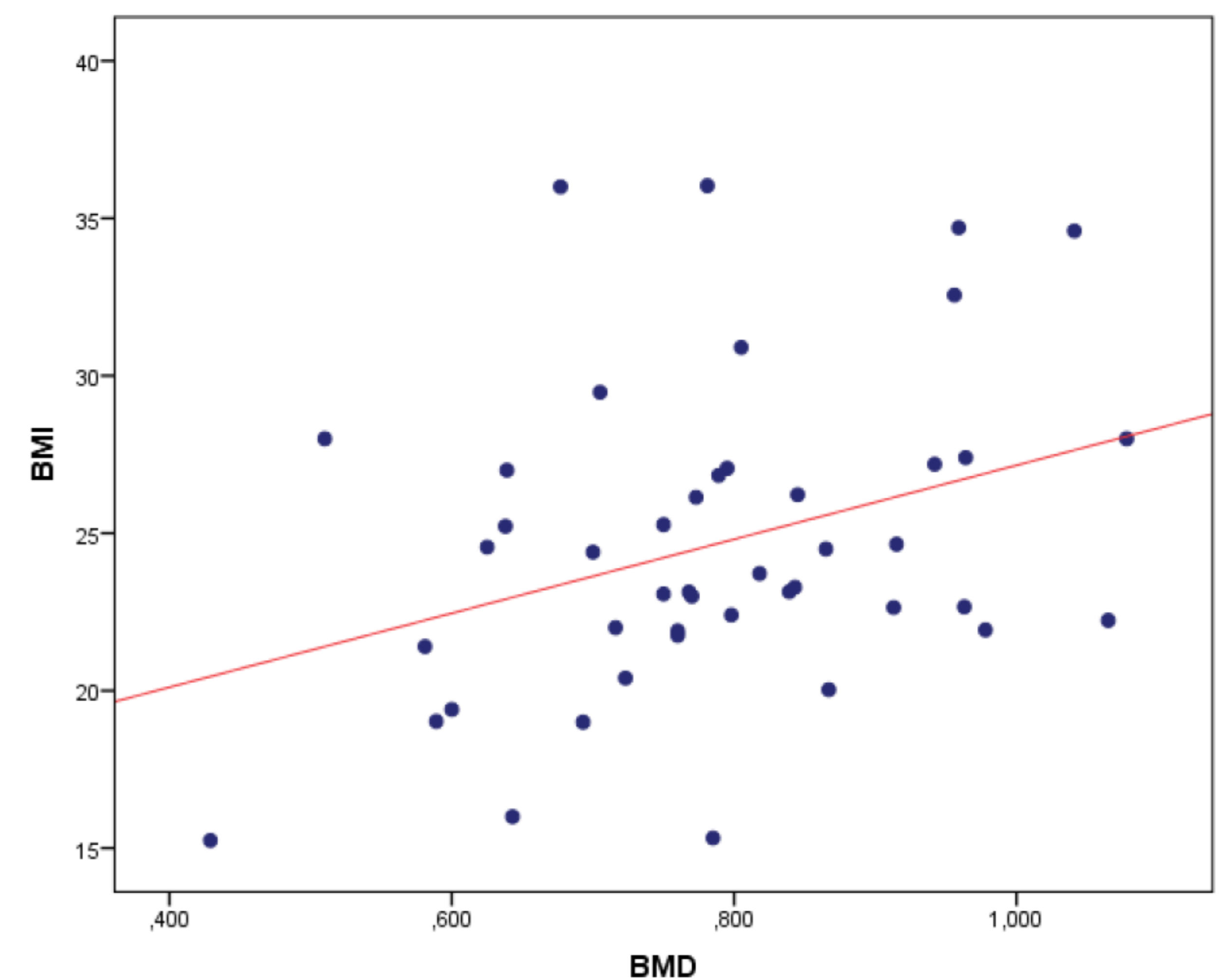


Figure 2. The relation between BMI and BMD.

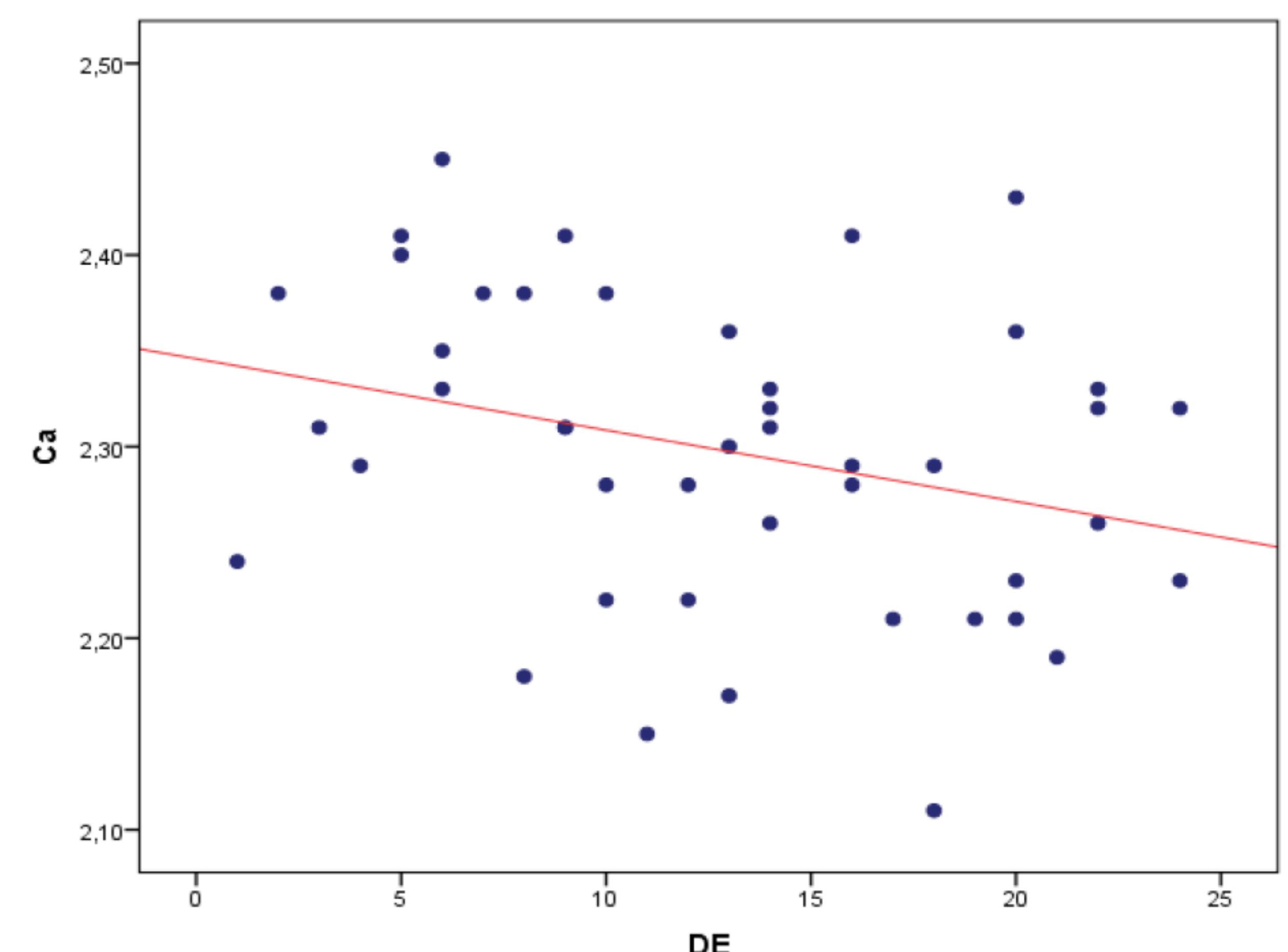


Figure 3. The relation between DE and Ca.