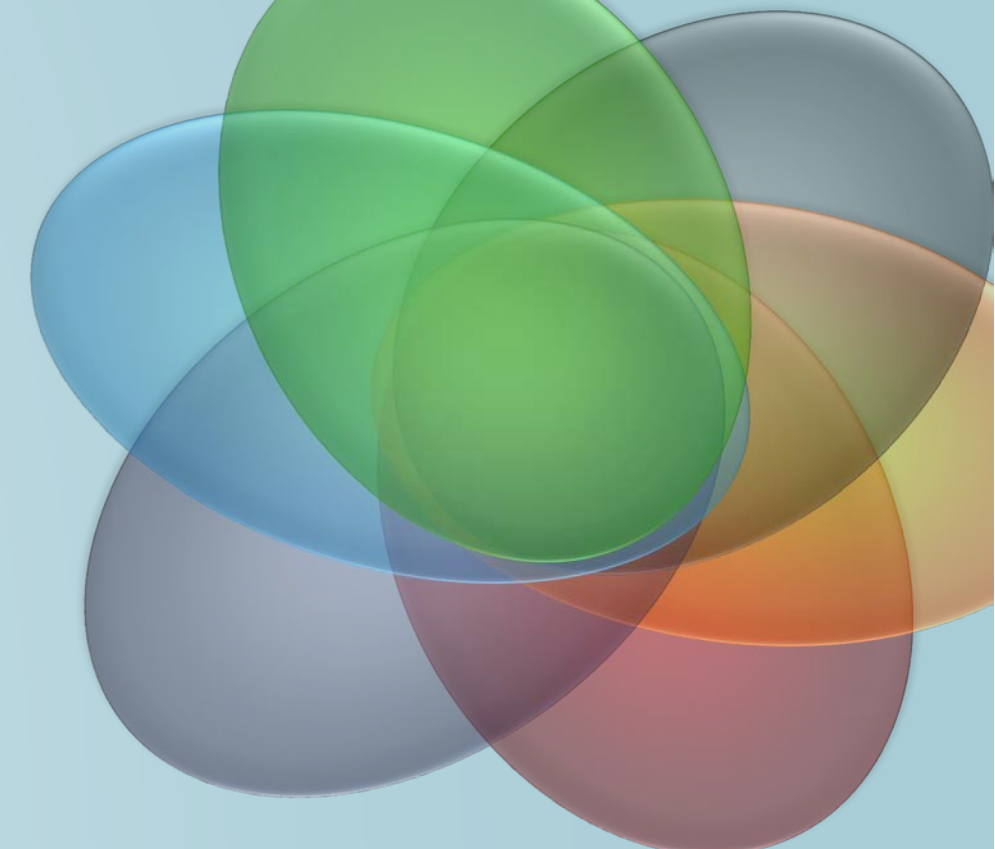


Growth and Bone Mineral Density in Egyptian Children with Congenital Adrenal Hyperplasia on Glucocorticoid Replacement Therapy; A Single Center Study



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Background

- Children with congenital adrenal hyperplasia (CAH) need chronic glucocorticoid therapy, both to replace congenital deficit in cortisol synthesis and to suppress the overproduction of androgens by the adrenal cortex. High doses of glucocorticoid taken chronically might affect bone metabolism and lead to alterations of bone mass in this condition. In particular, they could increase bone resorption rate. Bone mineral density (BMD) by energy X-ray absorptiometry (DEXA) scan is a very strong predictor of bone strength and biochemical markers of bone formation and turnover have been developed to look at bone metabolism.

Objective of the study

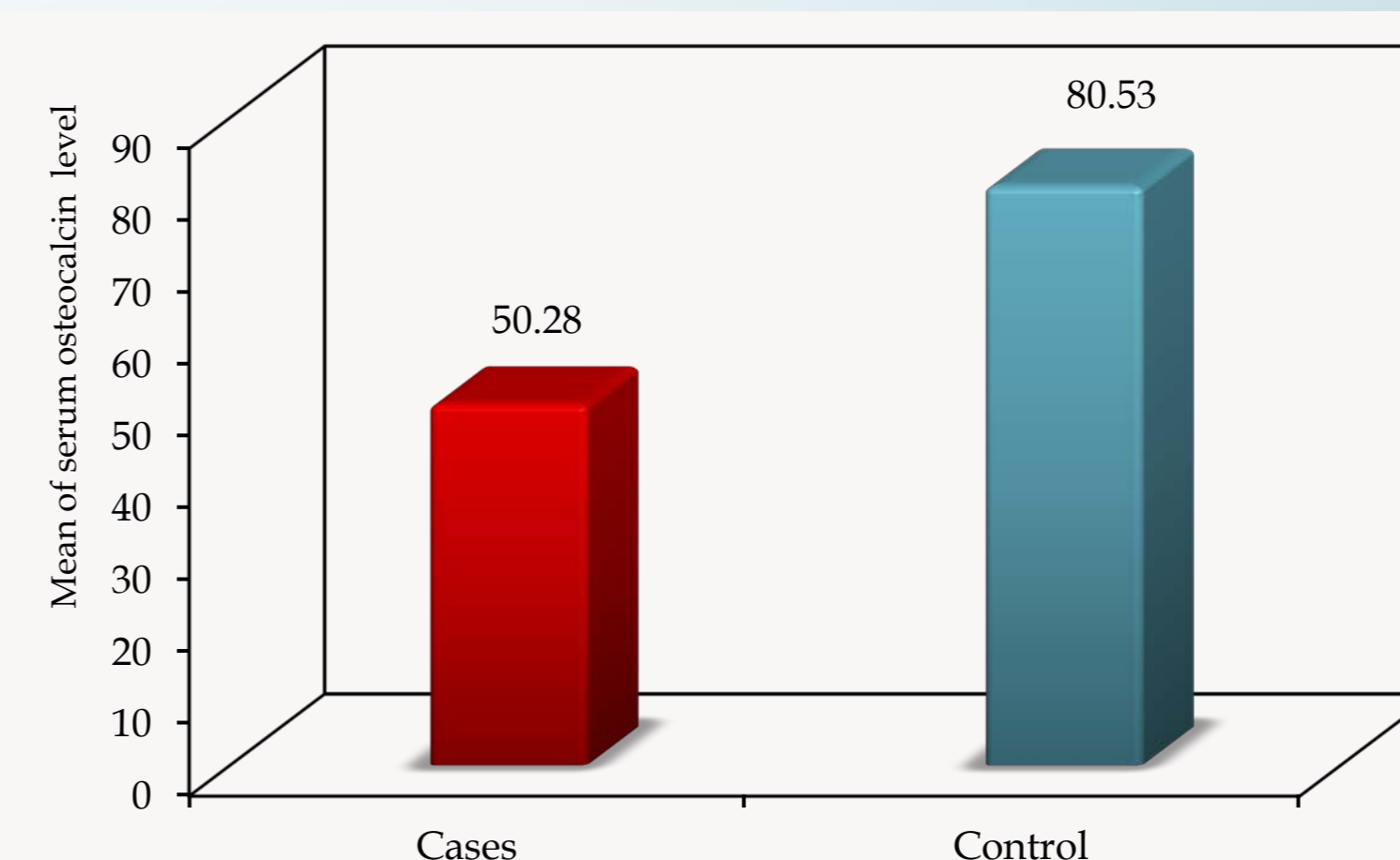
- To assess the effect of glucocorticoid replacement therapy (hydrocortisone or prednisone) in children with CAH on growth and bone mineral density.

Methods

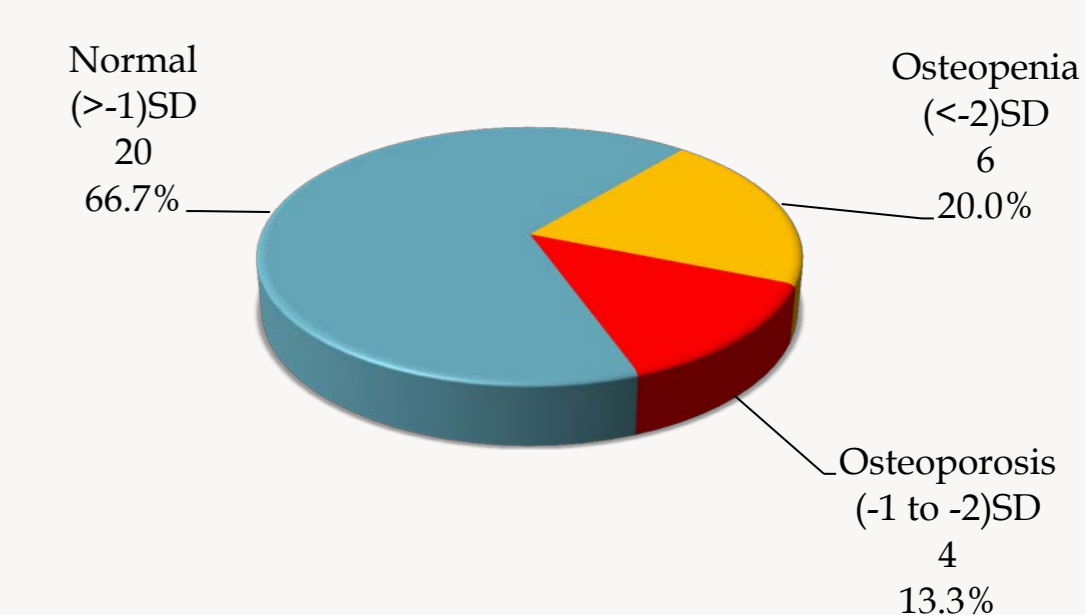
- The present study was conducted on 60 children (2 groups): Group 1 included 30 children, diagnosed with congenital adrenal hyperplasia attending the Endocrinology Clinic in Alexandria University Children's Hospital. Group 2 included 30 healthy children matching in age and sex as controls.
- Thorough history taking and thorough clinical examination were done stressing on anthropometric measurements. Pubertal status was assessed by Tanner staging. Laboratory investigations as calcium profile (corrected calcium for albumin, serum phosphorus, and alkaline phosphatase function), serum 17-OH progesterone and serum osteocalcin level were measured. Every patient underwent dual-energy X-ray absorption (DEXA) scan of the lumbar spine.

Results

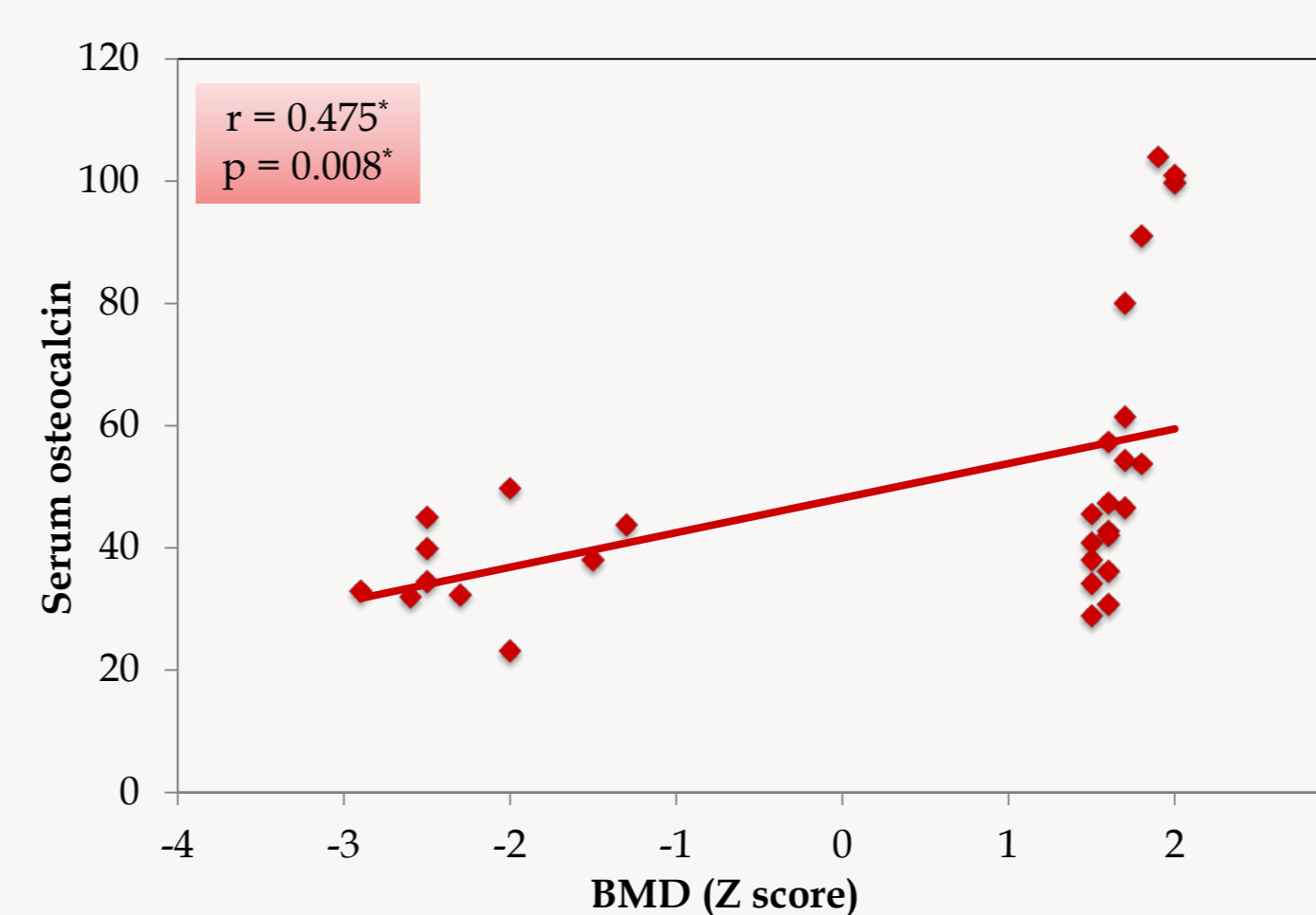
- The mean serum osteocalcin level was significantly lower in the patient's group than in the controls group.
- Twenty patients (66.7%) were found to have normal BMD (Z score > -1 SD) while 6 patients (20%) were found to have osteoporosis (Z score < -2 SD) and 4 patients (13.3%) had osteopenia (Z score from -1 to -2 SD).
- Twenty-two patients (73.3%) were treated by prednisone and 8 patients (26.7%) were treated by hydrocortisone.
- There was no significant difference in growth, biochemical parameters and BMD between children receiving prednisone and children receiving hydrocortisone.
- BMD had a significant positive correlation with serum osteocalcin level and negative correlation with both serum alkaline phosphatase and 17OH progesterone levels.



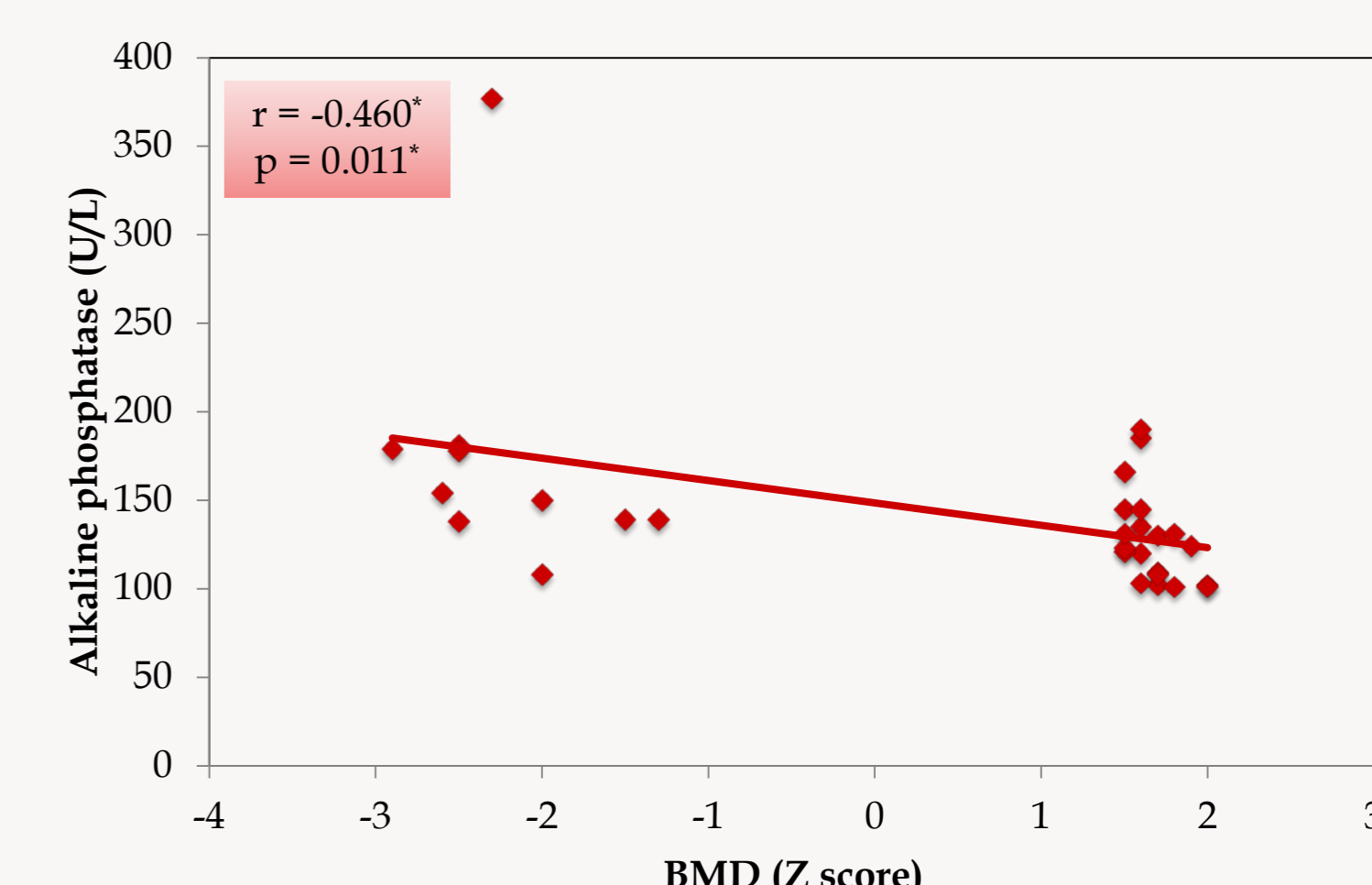
Comparison between the cases and control groups according to serum osteocalcin levels



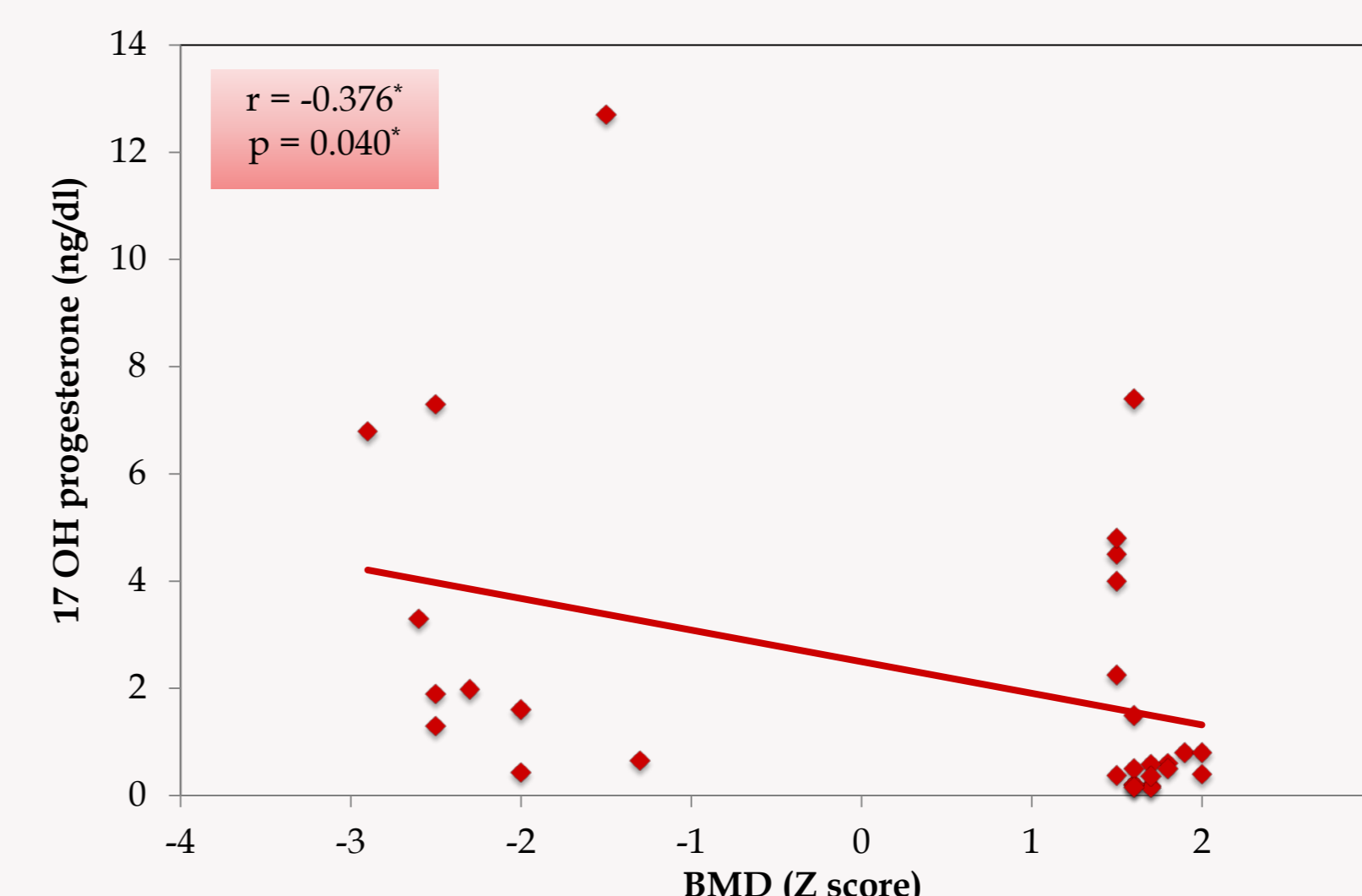
Distribution of the cases of CAH according to BMD scan



Correlation between BMD (z score) and serum osteocalcin in cases group



Correlation between BMD (z score) and serum alkaline phosphatase in the cases group



Correlation between BMD (z score) and serum 17 OH progesterone in the cases group

Conclusions

- Children with CAH may have reduced BMD and increase bone turnover.

References

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