RELATIONSHIPS AMONG ANDROGENS, OSTEOCALCIN AND LOW BONE MASS DENSITY IN A COHORT OF ADULTS WITH DOWN’ SYNDROME

Context: People with Down Syndrome (DS) show lower bone mass density (BMD) values in comparison to general population. Hence, DS is considered an independent risk factor and the most significant predictor of low BMD among people with intellectual disabilities. It seems that a low BMD is more frequent in males rather than in females, probably due to androgen hormones. Recent studies show that osteocalcin influences androgen levels in a bone-testis axis. Objectives: To explore relationship among androgens, BMD and bone metabolism for therapeutical purposes. Methods: We measured testosterone, SHBG, albumin, DHEAS and osteocalcin levels in blood plasma. BMD was evaluated with a DEXA scan performed by a Hologic machine. Patients: We enrolled 29 DS adults aged 18-64 (11 males), none of them under treatment with androgens. Interventions: Cross-sectional cohort study. Main outcome measures: Correlations among free testosterone index (fT), DHEAS, osteocalcin and BMD. Results: There was a significant difference in DHEAS levels between osteoporotic (O) and non-osteoporotic (NO) patients in both sexes [2387.62 ± 689.86 ng/ml in NO males, 4549.33±1835.34 ng/ml in O males (P<0.01; mean age 26). 2016.39±971.57 ng/ml in NO females, 1128±239.60 ng/ml in O females (P<0.01; mean age 50)]. Correlations were found in male patients between osteocalcin levels and fT (r²=0.49) and osteocalcin levels and DHEAS (r²=0.23). Conclusion: Androgen hormones seem to be involved in osteoporosis in DS: incidence of osteoporosis in females with DS is higher in post-menopause -when DHEAS physiologically decreases- while in males, incidence of osteoporosis is higher at a young age, with an opposite trend of DHEAS levels between males and females, probably due to the different mean age. Further studies could assess the role of androgen therapy in osteoporotic patients with DS, especially young men and postmenopausal women.