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Effects of estrogen and vitamin D polymorphisms on bone density in adolescent anorexia nervosa patients

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One of the most serious complications of anorexia nervosa, which is an important cause of physical and physiological morbidity in the adolescent age group, is its effect on bone density. Osteopenia or low bone mineral density (BMD) is the precursor of osteoporosis and it is found in at least one bone area in about fifty percent of anorexia nervosa patients. Since serious bone density deficit can be observed early after the initiation of the disease, determination of the correlation between BMD and genetic polymorphisms in anorexia nervosa cases can provide an opportunity for early identification of cases under greater risk and also earlier implications of necessary precautions for osteopenia. This study was performed at Hacettepe University İhsan Doğramacı Children Hospital Adolescents Medicine Clinic from April 2015-March 2017. Forty five adolescents were diagnosed with anorexia nervosa between years 2009-2016, in accordance with the DSM-IV-5 criteria, within the age of 10 to 18 comprised the case group, and 46 age and sex matched healthy adolescents were the control group. Vitamin D (VDR Bsml ve VDR Fokl) and estrogen receptor (ESR1Xbal, ESR1Pvull) polymorphisms were studied for each group. BMD values of the case group were classified as low and normal, and polymorphisms were compared between these two groups. No statistically significant result could be found between polymorphisms and femur and lumbar bone density (g/cm2) and Z scores in the anorexia nervosa group. However, in female patients, a positive effect of bb genotype of VDR BsmI polymorphism on femur Z scores (p=0.103) and Ff genotype of VDR FokI polymorphism on vertebra Z scores (p=0.097) was observed. Similarly, in female patients, the existence of bb genotype of VDR BsmI polymorphism was found to have a positive effect on femur bone density when measured in terms of g/cm2 although it could not be shown statistically, (p=0.073). Different than the analysis performed with Z score, a positive effect of Ff genotype of VDR FokI polymorphism could not be found on the vertebra bone density on female patients. However, in male patients, a positive effect of Ff genotype on vertebra bone density in terms of g/cm2 was observed (p=0.061). The effects of body mass index (BMI), duration of disease and amenorrhea on BMD were studied and an opposite relation between vertebra BMD and duration of illness and amenorrhea, and a positive relation between femur BMD and BMI was found to be statistically significant in female cases. In conclusion, vitamin D receptor gene polymorphisms BsmI bb genotype has positive effects on femur bone density, whereas FokI Fff genotype has positive effects on vertebra bone density. Statistically significant results of the effect of polymorphisms may be obtained when a larger case group is involved.

Biography

Isil Inan Erdogan has got her MD degree from Hacettepe University in Ankara, Turkey in 2010. She has completed her elective in King's College London School of Medicine, Cardiology Department at St. Thomas's Hospital in August, 2008. She started her Pediatrics Residency in Hacettepe University in 2012 and will become a Specialist in a few months' time. She has been to Showa University Pediatrics Department in Tokyo, Japan for four months as an Observer/Researcher in 2016 and joined both clinical and research studies.

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