The effect of anticonvulsants use on bone mineral density in non-ambulatory cerebral palsy children

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Keywords:
anticonvulsants
cerebral palsy
DXA
Bone mineral density

Introduction
Childhood and adolescence are critical periods for bone mineralization. Chronic treatment with anticonvulsant medication was observed to be significantly correlated with a lower bone mineral density. However, based on our retrospective study on 109 cerebral palsy (CP) children in 2006, we could not demonstrate any association of anticonvulsants with increased fracture rate in non-ambulatory CP children. Possible impact of anticonvulsants on BMD was not clearly demonstrated.

Objectives
The primary objective is to evaluate the effect of anticonvulsants on bone mineral density in non-ambulatory cerebral palsy children. The secondary objective is to identify the risk factors for low bone mineral density in this group of children.

Methodology
This is a cross-sectional case-control study carried out in developmental disability unit (DDU) in Caritas Medical Centre. Study group comprised of 18 non-ambulatory cerebral palsy children and adolescents (6M, 12F) aged between 5.0-19.5 years old. Control group comprised of 14 concomitant non-ambulatory CP children (6M, 8F) aged between 7-19.1 years old. Patients underwent physical examination, blood taking, nutritional assessment and dual-energy x-ray absorptiometry (DXA) scan of total body below head (TBLH). Z-score was calculated for each patient.

Result
Anticonvulsant use showed no significant and detrimental impact on bone mineral density of non-ambulatory cerebral palsy children. A low weight for age Z-score was
found to be a significant independent risk factor predictive of low BMD. Early nutritional intervention to optimize body weight may help to increase bone mineral density.