Objectives: The objective of this study was to analyse bone mineral status in children with epilepsy, on antiepileptic drugs (AEDs) regimen, using serum calcium, 25 (OH) vitamin D and Bone alkaline phosphatase (BALP) and compare these with age and sex matched controls.

Patients and Methods: This was a case - control study, conducted at University of Port Harcourt Teaching Hospital, from September 1 2018 to May 31 2019, with 200 (100 cases and 100 controls) participants, aged 1 - 18 years. Serum calcium, 25 (OH) vitamin D and BALP were analysed in children consecutively recruited using o-Cresolphthalein colorimetry for calcium, ELISA for BALP and 25 (OH) vitamin D. Student's t test was used to compare mean among cases and controls and correlation analysis to test relationships between variables.

Results:
- Serum calcium and vitamin D were significantly lower in cases, but BALP was higher (P > 0.001).
- Twenty two percent of cases were below normal vitamin D levels, as against 11% of controls (p = 0.05), while sixty two percent of cases had hypocalcaemia as against 27% of controls (p > 0.001).
- Cases receiving carbamazepine had lower vitamin D and calcium levels than those receiving phenobarbitone and sodium valproate, but those on sodium valproate had higher BALP.
- Children on polytherapy had lower vitamin D and calcium but higher BALP levels.
- Though not significant, there were negative correlations between BALP and vitamin D, but positive correlations between calcium and vitamin D and calcium and BALP.

Conclusion:
- Mean serum calcium and 25 (OH)D levels in children on AEDs in UPTH are lower than AED apparently healthy controls.
- Mean serum bALP level children on AEDS is significantly higher than apparently healthy controls in UPTH.
- The prevalence of hypocalcaemia in children on AEDS in UPTH is high.
- The longer the duration of therapy, the lower the serum 25 (OH)D levels in children on AED.
- Cases on AED polytherapy had significantly lower serum 25 (OH)D levels than those on monotherapy.

Table 1: Mean serum levels of 25(OH) vitamin D, Calcium, And bALP of subjects showing significantly lower levels in cases than controls.

Table 2: Relationship between mean serum levels of 25 (OH)D, Calcium and bALP and the duration of antiepileptic therapy in study cases showing a negative correlation that was significant for Calcium.

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