

Klotho Level as a Marker of Low Bone Mineral Density in Egyptian Sickle Cell Disease Patients

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Abstract : Summary: Bone involvement of sickle cell disease (SCD) patients varies from acute clinical manifestations of painful vaso-occlusive crises or osteomyelitis to more chronic affection of bone mineral density (BMD) and debilitating osteonecrosis and osteoporosis. Secreted klotho protein is involved in calcium (Ca) reabsorption in the kidney. This study aimed to measure serum klotho levels in children with SCD to determine the possibility of using it as a marker of low BMD in children with SCD in correlation with a dual-energy radiograph absorptiometry scan. This study included 60 sickle disease patients and 30 age-matched and sex-matched control participants without SCD. A highly statistically significant difference was found between patients with normal BMD and those with low BMD, with serum Ca and klotho levels being lower in the latter group. Klotho serum level correlated positively with both serum Ca and BMD. Serum klotho level showed 94.9% sensitivity and 95.2% specificity in the detection of low BMD. Both serum Ca and klotho serum levels may be useful markers for detection of low BMD related to SCD with high sensitivity and specificity; however, klotho may be a better indicator as it is less affected by the nutritional and endocrinal status of patients or by intake of Ca supplements.

Keywords : sickle cell disease, BMD, osteoporosis, DEXA, klotho

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