# Bone alterations in children with idiopathic hypercalciuria at the time of diagnosis.

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**Abstract:**
Some children with idiopathic **hypercalciuria** (IH) develop bone alterations at some stage of the disease. The aims of this study were to evaluate bone mass in 88 children with IH (G1) at the time of diagnosis and to compare the findings with data for a control group of 29 normal children (G2). Kidney and bone metabolism markers were measured in both groups, and bone densitometry was performed. Serum alkaline phosphatase, intact parathyroid hormone, urinary calcium and uric acid were significantly higher in G1, whereas urinary volume and urinary citrate excretion were lower. The following densitometric parameters were significantly lower in G1: (1) lumbar spine (L(2)-L(4)) bone mineral density (BMD), bone mineral content (BMC), BMC corrected for height and for width of the vertebra, volumetric BMD (BMDvol), and Z score; (2) whole-body BMD; (3) femoral neck BMD. Lumbar spine BMDvol was reduced (**osteopenia**) in 35% of the patients compared with G2. N telopeptide, a urinary marker of bone resorption, was significantly higher in G1 than in G2, and was negatively correlated with lumbar spine BMD and BMDvol. Children with urinary lithiasis or idiopathic hyperuricosuria associated with IH showed no significant differences in bone metabolism compared with children without these associations. We conclude that (1) there is an altered bone metabolism in IH, with **osteopenia** already present at diagnosis in 35% of the patients; (2) N telopeptide is one of the most

useful markers of bone alterations in IH, especially at an early stage of the disease; (3) investigation of bone metabolism is necessary in IH to prevent future serious consequences such as osteoporosis and bone fractures.

**Major Subjects:**

- Bone Density
- Calcium / * urine
- Calcium Metabolism Disorders / * metabolism / urine

**Additional Subjects:**

- Adolescent
- Alkaline Phosphatase / blood
- **Child**
- **Child**, Preschool
- Female
- Femur
- Humans
- Lumbar Vertebrae
- Male
- Parathyroid Hormone / blood
- Research Support, Non-U.S. Gov't
- Uric Acid / urine
- Urinary Calculi / metabolism

**Chemical Compound Name:**
(Parathyroid Hormone); 69-93-2(Uric Acid); 7440-70-2(Calcium); EC 3.1.3.1(Alkaline Phosphatase)

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