Low Level Of Vitamin D Increases The Risk Of Low Energy Fractures In Children.

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Introduction: The physiological process by which vitamin D regulates calcium and phosphorus metabolism, the major mineral constituents of bone tissue, is by far very well understood. However, the clinical implementation of vitamin D deficiency on bone fragility in childhood remains controversial.

Objective: The aim of this case-control study is to investigate the prevalence of vitamin D deficiency among Lebanese children who experienced a "low-energy" fracture in our center.

Materials and Methods: A total of 37 cases and 70 control patients were included in this study. All healthy children admitted to the emergency department between 1 and 15 years of age were potential candidate for this study. Fracture was confirmed by conventional X-ray radiography and 25-HydroxyVitamin D level of the same candidates was measured.

Results:

- Localization of Fractures
- Fracture patterns

- Period of occurrence of fracture
- Vitamin D deficiency among case patients

Univariate analysis Vit D & low energy fracture cases & controls

<table>
<thead>
<tr>
<th>Low vit D</th>
<th>Cases</th>
<th>controls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes&lt;20ng/ml</td>
<td>19(11)</td>
<td>13(21)</td>
<td>32</td>
</tr>
<tr>
<td>No&gt;20ng/ml</td>
<td>18(26)</td>
<td>57(49)</td>
<td>79</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>70</td>
<td>107</td>
</tr>
</tbody>
</table>

Chic square: 12.4076 with one degree of freedom P-value: 0.000472<0.001

Conclusion:

- Association between Vitamin D deficiency and low energy fractures
- Dosage of vit D in low energy fracture
- Dosage of siblings of fractured child
- Supplementation with vit D twice per year
- More exposure to sunlight
- Exploration of possible cases of vit D Deficiency

Limitations:

- Small sample size & monocentric study
- Operative versus non operative fracture (not studied)
- BMI of children (not studied)

Sample size: 107

- 37 cases
- 70 controls
- 31 boys
- 6 girls
- 43 boys
- 27 girls

Hypothesis testing by country in children in the Middle East and North Africa