

Nutritional supplementation for the prevention of Kashin-Beck disease in children of rural areas

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Several hypotheses have been proposed to explain the etiology of Kashin-Beck disease (KBD), a chronic osteochondropathy. Different mechanisms are probably involved. Nutritional inadequacy might play a role. Nutritional evaluation of children living in endemic areas shows a high prevalence of growth retardation and rickets. Soil analysis and the analysis of locally produced food have revealed very low levels of selenium. Selenium is involved in antioxidant mechanisms. The effects of selenium supplementation have been tested in several trials: some concluded that selenium contributed to the prevention of KBD, others failed to prove this. Combined iodine and selenium deficiency can occur in the same area. Iodine deficiency, through its implication in thyroid metabolism, plays a role in bone metabolism. Correction of iodine deficiency may contribute to the prevention of KBD. Trace element analyses in the hair of children living in endemic areas have revealed low levels of boron and germanium. The effects of supplements of these two trace elements have never been tested. It has recently been suggested that calcium and phosphorus metabolism might play a role in the development of KBD. Rickets is highly prevalent in some KBD endemic areas of Central Tibet, due to calcium deficiency and low intakes of vitamin D. Calcium and / or vitamin D supplementation failed to prevent KBD. However, prevalence of KBD seems to decrease in several endemic areas, probably due to a modification in life style and diet. These observations confirm the multifactorial etiology of KBD and the importance of multidisciplinary programs of prevention.