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Should healthy children continue to receive vitamin D supplements?

The question of vitamin D supplementation in the general population has been the subject of numerous recommendations and expert opinions, all agreeing on the need for supplementation in very young children. However, they recommended different dosages and indications for different ages and risk factors. As a result, the CNGE's Scientific Advisory Board examined the most solid literature data on children.

Although the prevalence of vitamin D levels below 30 nmol/L (i.e. 12 ng/mL) exceeds 10% in Europe, the incidence of rickets is around 3 per 100,000 children/year of all ages[1,2]. In France, the introduction of vitamin D supplementation in the 1960s and the marketing of vitamin D-enriched artificial milks since 1992 have been followed by a drastic reduction in the incidence of deficiency rickets. Nowadays, this disease, which is almost exceptional, affects breast-fed children who did not receive vitamin supplementation before the age of 5, and to a lesser extent those with risk factors for deficiency (obesity, dark skin, lack of sun exposure, reduced intake)[3].

In infants, the majority of randomized trials used serum vitamin D levels as the primary endpoint. They found that supplementation of 400 IU/d was sufficient to achieve serum vitamin D concentrations considered "normal". Higher doses did not improve bone density, but did increase the risk of hypercalcemia. In the absence of risk factors for rickets, the level of evidence was insufficient to conclude that it was clinically effective[4]. There have been several reports of errors leading to overdoses with sometimes serious clinical consequences (linked to hypercalcemia or hyperphosphatemia), notably in the case of over-the-counter access to solutions with high vitamin D concentrations[5].

In children aged 1 to 5, no randomized controlled trials (RCTs) of sufficient methodological quality evaluating the risk of rickets or bone fragility have been identified[6,7].

In children aged 5 to 13, the trials showed no conclusive results in reducing the risk of rickets. A double-blind RCT of 8,851 children aged 6 to 13 showed no difference between the group supplemented with vitamin D for 3 years and the control group, either in terms of fracture risk or adverse effects[8-11].

In adolescents between puberty and 18 years of age, supplementation increased serum vitamin D levels, with discordant results on the benefits in terms of bone density[12,13].

In terms of extraosseous efficacy, vitamin D supplementation has no influence on growth, body composition or development.

puberty[14]. For atopic pathologies and asthma, data suggest a slight reduction in the severity of atopic dermatitis and allergic rhinitis, with no influence on the control or severity of asthma in childhood, in cases of initial serum vitamin D levels < 10 ng/L, and with a low level of evidence[15,16]. When it comes to reducing the incidence of upper respiratory tract infections, there is insufficient clinical evidence to conclude that it is effective: the few positive trials did not show any significant difference in the severity of infections. What's more, they were of low level of evidence and not transposable to the epidemiological situation in France[17,18]. In conclusion, the indication for vitamin D supplementation is based on the historical epidemiological observation of a reduction in the incidence of rickets. Despite the scarcity of RCTs of good methodological quality evaluating clinically relevant criteria, it is reasonable to maintain systematic supplementation of 400 to 800 IU/day in infants, particularly before the age of 1, in cases of breastfeeding, or in the presence of risk factors for deficiency, even if the individual clinical benefit is currently impossible to demonstrate due to the low incidence of rickets. For other clinical situations, current data do not allow us to conclude that the benefit/risk balance of vitamin D supplementation is favorable.

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