

Breastfeeding and vitamin D supplementation reduce the risk of Kawasaki disease in a German population-based case-control study

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Objectives: Kawasaki disease (KD), a vasculitis of unknown etiology, is in some cases complicated by the development of coronary artery aneurysm (CAA). To date, the exact pathomechanism of KD is unknown, both environmental and genetic factors seem to be associated with the development of the disease.

Methods: Data on 308 KD patients, recruited from the active population-based German Pediatric Surveillance Study in the years 2012 - 2014, were used to evaluate the impact of different perinatal factors on KD. The design was a matched case-control study with regard of age, sex and place of residence (n=326 controls). All KD patients were evaluated and fulfilled the international diagnostic KD criteria. A standardized questionnaire was used to review breastfeeding practices, vitamin D supplementation and birth characteristics. Logistic regression analyses were used to obtain odds ratios (OR) for the case-control pairs. Simple dependency analyses were performed to test the impact of the factors on the clinical course.

Results: There was no difference in birth weight or parturition between the KD patients and the controls, but vitamin D supplementation and breastfeeding were independently negatively associated with KD, even when adjusted for age, place of residence and sex. The duration of vitamin D was significantly less in children with KD than in children without KD (p=0,039, OR=0,964, 95% CI: 0,931 - 0,998) and the duration of breastfeeding was significantly shorter in patients with KD than in the controls (p=0,013, OR=0,471, 95% CI: 0,260 - 0,853). However, we were not able to detect any influence of either vitamin D supplementation or breastfeeding on the course of disease. Developing CAA in the acute phase or in long term (one year after disease onset), as well as being refractory to intravenous immunoglobulin treatment and the level of inflammatory lab values, did not differ between KD patients with and without breastfeeding/ vitamin D supplementation.

Conclusion: Our results indicate protective effects of breastfeeding and vitamin D supplementation on the development of KD in our study population, but they do not influence the natural course of the disease. Although the effects were small, it underlines the overall benefit of both interventions.