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PEDIATRIC UROLOGY

Influence of maternal diet on the development of malformation of the external genitalia – Are we ready to make some recommendations?

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The influence of our environment on the development of malformation is well known and, again and again, discussed with great enthusiasm. For example, the supplementation of the diet with folic acid has been proven to prevent neural tube defects already in 1991 [1, 6]. However, despite this well–known fact, only 10.6% of women take folic acid at least four weeks before getting pregnant; although 60% know the increased risk. It was interesting to see, that there were no big differences between the social groups [7]. Some epidemiological studies suggest an increasing risk of disorders / malformation of the external genitalia in males. The influence of the hormonal environment, especially of androgens, has been discussed. A recently published review demonstrated, that with the possible exception of testicular cancer there is no strong epidemiological evidence to indicate that prenatal exposure to estrogen are linked to disturbed development of the external genitalia [8]. Skakkebaek and co–workers suggested that hypospadias, undescended testis, testicular cancer and poor semen quality are symptoms of the testicular dysgenesis syndrome, which may be due to adverse environmental influences [9].

If there really is an increasing incidence of hypospadias, as stated in the article of Kowal and Co–Worker [5], is questionable. For example, in New York State there were no statistically significant changes in hypospadias rates between 1992 and 2005 [4]. Also, in Europe there was no increase in the incidence of hypospadias observed [3]. In a Danish study, birth prevalence of hypospadias was significantly higher than in a parallel Finnish study (1.03 vs. 0.27%; P = 0.012). However, at three years of age the prevalence increased to 4.64% because additional mild cases were detected when physiological phimosis dissolved [2]. Therefore, the so–called increase of hypospadias may be only related to higher awareness of small variants of hypospadias.

The presented study by Kowal and co–worker is quite interesting. They looked for some signs of vitamin B12 deficiencies in mothers of babies born with hypospadias. High levels of propionylcarnitine (C3) seem to be a sensitive indicator of vitamin B12 deficiency as stated in the literature mentioned in their article. The authors found that in 41 newborns with hypospadias, the mean concentration of propionylcarnitine was higher compared to 90 newborns without congenital anomalies [3.52 (1.50) micromol/L vs. 2.91 (1.13) micromol/L (p = 0.026)]. The mean methionine level in these cases was insignificantly lower than in controls [5]. This seems to suggest the influence of the environment on the development of congenital anomalies. However, like in many other congenital malformations, the cause is multifactorial and to this day we still do not know which factors are important and which are not. It would be interesting if the authors could also determine the vitamin B12 levels in the mothers, ask them for a description of their diet, and compare it to the levels propionylcarnitine in the newborns. Before recommendation about some vitamin supplementation can be made, we need much stronger evidence that vitamin B12 plays a role in the development of hypospadias.

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