

Perinatal factors associated with early psychomotor delay in children with congenital heart defects (CHD): the first Russian study

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Objectives

To establish an association between perinatal factors and impaired psychomotor development in children with CHD under 16 months of age.

Methods

In 45 children with prenatally diagnosed CHD, psychomotor development was assessed using the Russian version of the **Kent Infant Development Scale** at the age of 3 - 16 months.

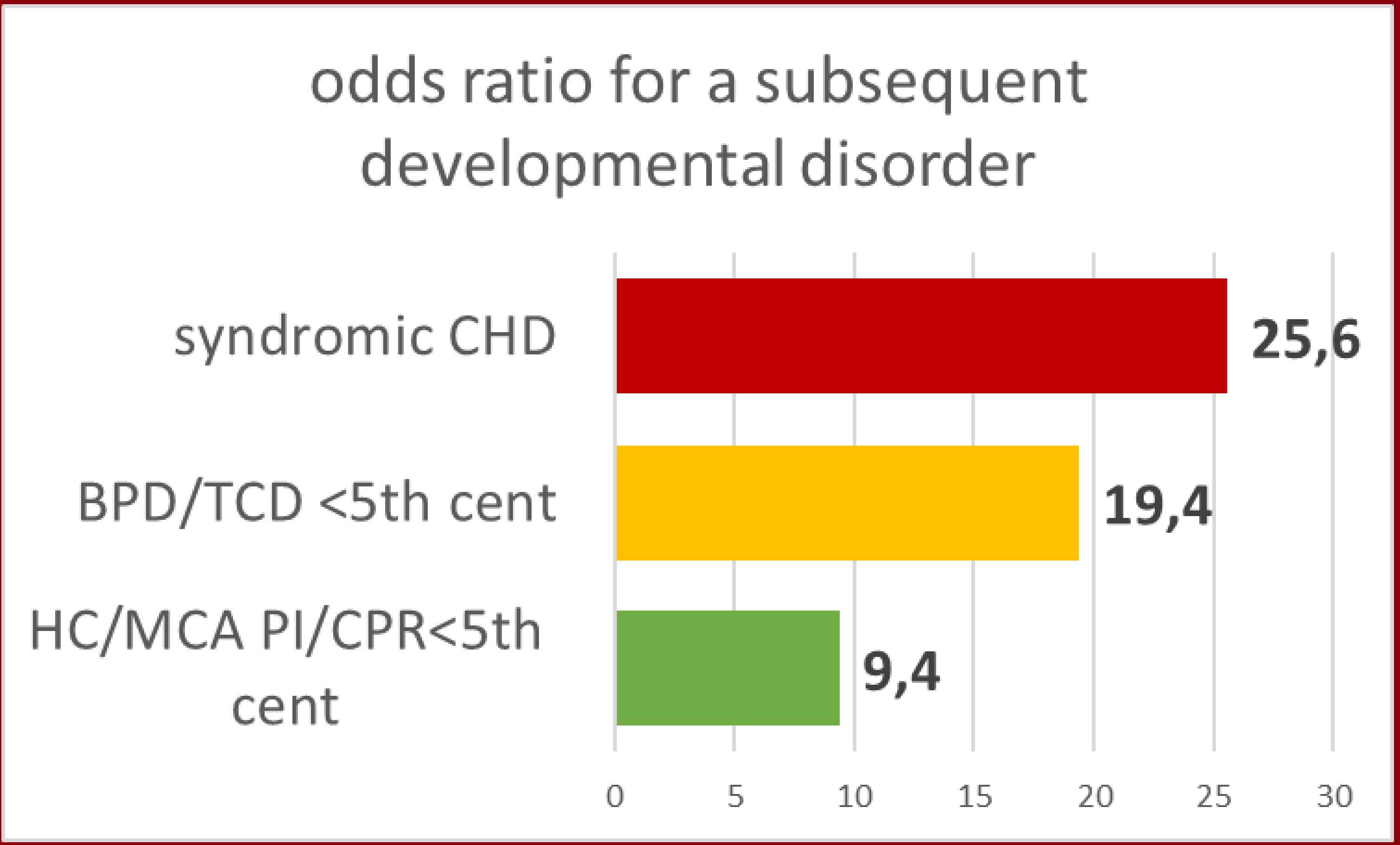
A retrospective analysis of the frequency of detection of **37 perinatal risk factors** for subsequent developmental delay in the child was performed, including clinical, epidemiological and socio-family factors; fetal factors, including the type of CHD, sex and syndromic pathology of the fetus; antenatal biometry and Dopplers; as well as intranatal and neonatal factors, including prematurity and hypoxia at birth.

Results

Delayed and normal psychomotor development were noted in 13 (28.9%) and 32 (71.1%) cases, respectively. Compared to those with normal psychomotor development, at the antenatal period, children with early development delay more frequently had head circumference (HC), biparietal diameter (BPD) and transverse cerebellar diameter (TCD), pulsation index in the middle cerebral artery (MCA PI) and the cerebroplacental ratio (CPR) below the 5th centile ($p<0.05$), as well as genetic pathology of the fetus ($p=0.001$).

All other parameters, including types of congenital heart disease, had no difference in frequency between groups ($p>0.05$).

The odds ratio for a subsequent developmental disorder for was 9.4 (95% CI;1.52-57.7); 12.9 (95% CI; 2.1-77.7); 19.4 (95% CI; 2.0-190.1); 25.6 (95% CI 2.7-257.3) for low HC, MCA PI or CPR, BPD or TCD, and syndromic CHD, respectively.



Conclusions:

Prenatal identification of cases with the highest risk of early neurological disorders in a child with CHD allows for expanded opportunities for counseling a couple after detection of fetal cardiac pathology, as well as the development of a group of those in need of early rehabilitation aimed at improving the long-term prognosis for the health of the little patient.