

Long-term Cognitive Outcome of Children from Dexamethasone-treated Pregnancies

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INTRODUCTION

Up to present synthetic glucocorticoids have no alternatives worldwide in preventing respiratory distress syndrome in newborns at preterm delivery risk¹ and virilisation treatment in CAH-female foetus².

In Russia from 2003 to 2012 glucocorticoids (dexamethasone) have been listed in the standard therapy of pregnancy noncarrying risk of hyperandrogenic women³.

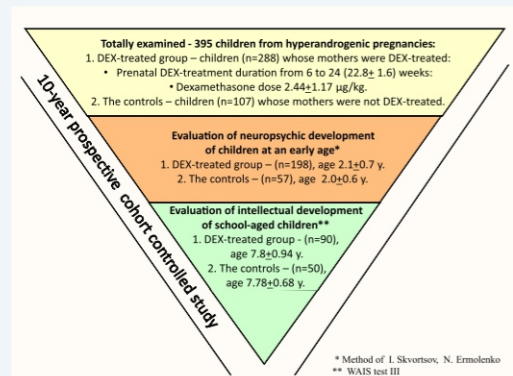
The experimental data from animal studies show that prenatal exposure to synthetic glucocorticoids leads subsequently to permanent consequences in offsprings: high risk of metabolic syndrome development, modifications of behavior and cognition⁴⁻⁵.

Long-term studies of possible outcomes of prenatal glucocorticoid treatment on children health are lacking and their results are contradictory⁶⁻⁷.

OBJECTIVES

To study possible long-term effects from glucocorticoids-treated pregnancies on children cognition at early and school ages.

MATERIAL & METHODS



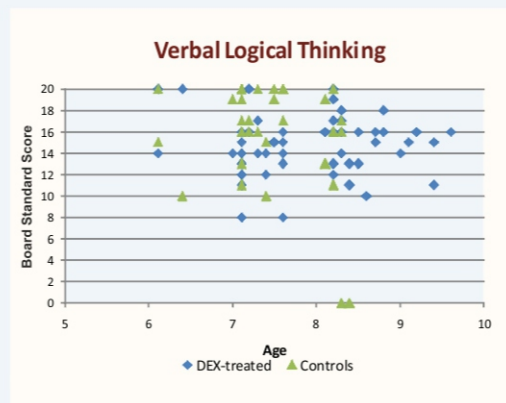
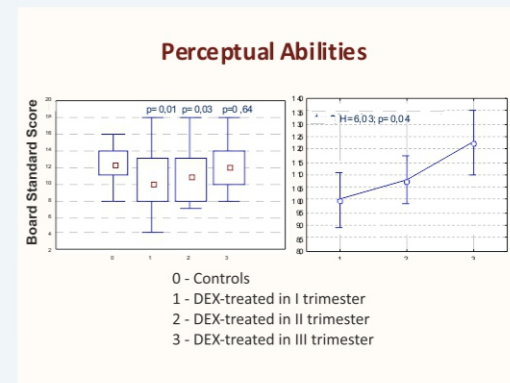
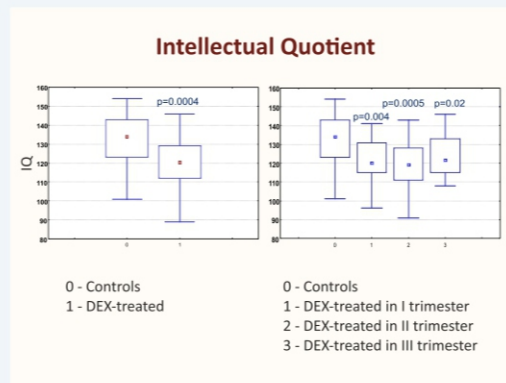
Inclusion Criteria: prenatal DEX-exposure at gestation period in the pregnancy case history, informed consent.

Exclusion Criteria: CNS organic lesion, urgent status at the moment of examination, refusal to participate in the research.

Statistics: compared variables in the independent groups by Student t-test and χ^2 test. To compare more than two independent samples: Kruskal-Wallis test. To analyze correlations between the variables: Spearman's test (r).

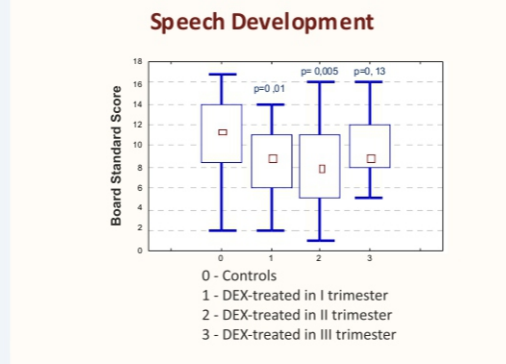
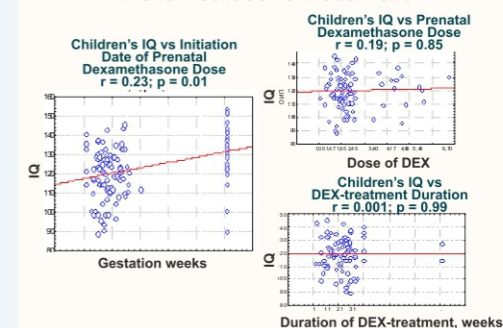
RESULTS

No development differences in the DEX-treated group and the controls were determined by the research data on children neuropsychic development at an early age. By contrast, significant differences of intellectual quotients of school-aged children have been revealed in the DEX-treated group vs the controls.



The significant decline of levels of visual motor coordination, rate of new skills formation, mental alertness has been stated in children from DEX-treated mothers in I gestation trimester.

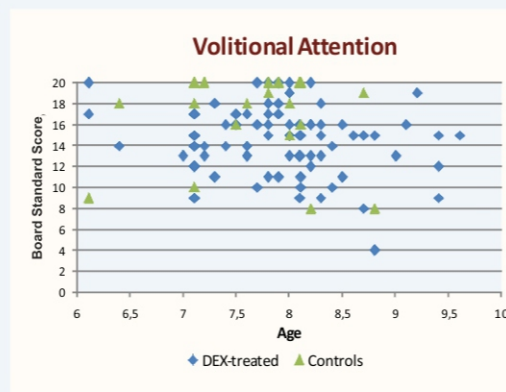
IQ of School-aged Children vs Prenatal Dexamethasone Treatment



The correlation between quotients of intellectual development of children and the dexamethasone dose has not been found.

However, the tendency duration of DEX-treatment, weeks of correlation between IQ quotients of school-aged children and the initiation date of prenatal dexamethasone treatment has been established ($r = 0.27; p = 0.004$).

Much lower levels of speech development of children from DEX-treated mothers in I and II trimesters of pregnancy have been observed.



CONCLUSIONS

1. Prenatal DEX-exposure at an early gestation leads to significant long-term negative effects on intellectual ability of primary school-aged children: decline of speech development level ($p = 0.005$), verbal logical thinking ($p = 0.0003$), volitional attention formation ($p = 0.01$) and organizability, monitoring activity ($p = 0.01$).

2. The level of general intelligence of children whose mothers have been treated with dexamethasone in I and II trimesters of pregnancy is considerably lower than that of children from the controls ($p = 0.004; p = 0.0005$ relatively).

3. No differences of cognitive development between children, prenatally treated with dexamethasone in III trimester, and the controls have been observed.

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