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Quantitative and qualitative assessment of the offspring in the Tail suspension test (TST) which mothers were treated with different doses of valproic acid during entire pregnancy

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Although antiepileptic therapy implies constant daily medication there is a lack of the animal model that examines consequences of continuous usage of VPA during gestation on the offspring development, with the accent on VPA doses that do not induce physical anomalies of progeny.

Our study was aimed to elucidate consequences of continuous maternal exposure to VPA (50, 100, 200 and 400 mg/kg/day) on early physical and neuromotor development of the offspring (postnatal days (PND) 5-15, NMRI mice).

It is well known the remarkable similarities between human and rodent motor development, i.e. immaturity at birth and rostro-caudal gradient of motor maturation.

The offspring was tested in the tail suspension test (TST) at PND 5, 10 and 15. The quantitative and qualitative evaluation of the animals' behavior in the TST was assessed.

The latency to the first immobilization in TST was measured and the maturational profile was assessed in all VPA-exposed groups.

Our findings showed for the first time that there are symptomatic similarities in early postnatal development between the offspring continuously exposed to different doses of VPA during intrauterine development, i.e. delayed somatic development was accompanied with postponed rostrocaudal gradient of motor system maturation and affected muscle tone.

Long-lasting functional consequences of prenatal exposure to VPA are of importance, but early motor development should not be neglected since it could be an indication of difficulties in later psychomotor activities. Subsequent assessment is important to discriminate between subjects with motor disorders and those that develop slowly but typically.

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