

青春期マウスの不安関連行動に対する、 出産前後期に負荷されたストレスの影響

西尾廣昭、徳毛孝至、平居貴生

International Journal of Developmental Neuroscience, 24 (4), 263-268 (2006)

Effects of perinatal stress on the anxiety related behavior of the adolescence mouse

Hiroaki Nishio, Kohji Tokumo and Takao Hirai

ABSTRACT : We evaluated the effects of sound noise or forced swim stress applied to pregnant mice or to neonatal mice on the anxiety-related behavior using the elevated plus-maze test performed during the age of 5 weeks. The anxiety related behavior of the male and female offspring were not affected by the antenatal stress treatment. When the forced swim stress was applied to the neonatal mice during the late lactation period, 14 to 18 days after birth, the male mice showed an elevated level of anxiolytic behavior accompanying the reduction of the emotion-related motor activity. The anxiety related behavior of the female mice was not affected by the stress treatment. Furthermore, we applied the sound noise or forced swim stress to the neonatal mice immediately after the weaning, 21 to 25 days after birth. The stress applied after the weaning period had no effect on the anxiety-related behavior. These results suggested that the stress applied during the lactation period, but not that during the antenatal period, nor after the weaning period, might have gender-dependently reduced the anxiety level of the male mouse. It was shown that the effects of perinatal stress on the anxiety-related behavior of the adolescent mouse varied according to the period of application and gender. The hypothesis that gender-dependent abnormalities in neurodevelopment might be caused by the excess stress applied to the breast-fed infant is of importance in elucidating the relationship between the psychoneurotic disorder in childhood and the environment stress of the breast-fed infant.

抄録 妊娠期マウスおよび新生児マウスに騒音刺激あるいは強制水泳ストレスを負荷し、生後5週目において高架式十字迷路テストによる不安関連行動の測定を行った。誕生前および離乳後ではなく、授乳期に負荷されたストレスが雄性マウスにおいてのみ、性に依存的に不安レベルの低下を引き起こした。すなわち、青春期マウスの不安関連行動に対する産周期ストレスの影響は、その負荷された期間および性によって影響されることが明らかとなった。このような性に依存した神経発達異常が授乳期児に負荷された過剰ストレスによって引き起こされているという本実験結果は、小児の精神神経疾患と授乳期児への環境ストレスとの関係を解明するための重要な仮説となっている。