Postnatal Oxytocin Improves Survival and Long-term Neurodevelopmental Outcomes in an Animal Model of Neonatal Abstinence Syndrome

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MATERIALS AND METHODS

Suckling rats were used at age 2 days (P2) to evaluate the effect of postnatal intranasal oxytocin (OT) treatment on survival. Animals were exposed to saline (SAL) or morphine (MOR) (50 mg/kg/day i.p.) treatments from P0-P14. M&B were administered i.p. from P2-P14 (MOR, 50 mg/kg/day; SAL, 5 mg/kg/day). Animals were randomly assigned to the following groups: SAL, S; MOR, control (M); MOR, 10 mg/kg/day (M10); MOR, 25 mg/kg/day (M25); MOR, 50 mg/kg/day (M50). MOR was administered 30 minutes at P2, 3, 5, 7, 9, and 11 hours post partum. We used a small animal Hamilton syringe with a 27-gauge needle to deliver the saline or morphine. (0.2 mL of saline or morphine was delivered for each injection).

RESULTS

Suckling rats were used at age 2 days (P2) to evaluate the effect of postnatal intranasal oxytocin (OT) treatment on survival. Animals were exposed to saline (SAL) or morphine (MOR) (50 mg/kg/day i.p.) treatments from P0-P14. M&B were administered i.p. from P2-P14 (MOR, 50 mg/kg/day; SAL, 5 mg/kg/day). Animals were randomly assigned to the following groups: SAL, S; MOR, control (M); MOR, 10 mg/kg/day (M10); MOR, 25 mg/kg/day (M25); MOR, 50 mg/kg/day (M50). MOR was administered 30 minutes at P2, 3, 5, 7, 9, and 11 hours post partum. We used a small animal Hamilton syringe with a 27-gauge needle to deliver the saline or morphine. (0.2 mL of saline or morphine was delivered for each injection).

DISCUSSION

In summary, our results highlight the potential role of oxytocin in the treatment of neonatal abstinence syndrome, particularly in the context of opioid addiction. Further research is needed to better understand the mechanisms underlying the beneficial effects of oxytocin in this context, as well as to explore its potential as a therapeutic intervention for this condition.