

A Study on Locomotor Pattern and Reinforcement Following Intracranial Self Stimulation in High/Low Responders to a Novel Environment

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INTRODUCTION-AIM

Evidence suggests that differences in the locomotor response of rats (high responders—HR versus low responders—LR) to a novel, open field are associated with respective changes in neural mechanisms that are also involved in the pathophysiology of addiction and other CNS disorders.

The aim of the present study is: a) the quantitative and qualitative differentiation of experimental rats into two groups depending on their behavioral reaction to a novel environment and b) investigation of the differentiation of these two groups according to the reinforcement behavior during the training procedure, as well as during the stabilization of reinforcement by the use of the intracranial self stimulation (ICSS) behavioral model.

MATERIALS AND METHODS

Male Wistar rats were used and divided into two groups named HR and LR according to their response to a novel environment (open field). Subsequently a monopolar electrode was implanted stereotaxically to the lateral hypothala-

mus. Seven days after this procedure, the twelve-day training ICSS procedure was initiated. During this procedure curves of animal response-frequency of stimulation were obtained.

RESULTS

Our results suggest that HR rats show a different behavioral pattern that is characterized by quantitative and qualitative alterations of the structure and organization of behavior. Further processing of the reinforcing curve did not show significant differences of the ICSS threshold values at the end of the training period, but there are indications suggesting that the two groups of animals show slightly different ways of behavioral learning during the training period.

CONCLUSIONS

The above results further prove the importance of differentiating animals into HR and LR groups in a novel environment, using a detailed recording approach but this differentiation may not be directly related to a deviation in the stabilization of reinforcement after ICSS.