

PARTICULARITY IN THE RESPIRATORY PATTERN AND ENERGY METABOLISM IN THE MODELING OF THE EXPERIMENTAL PARKINSONIAN SYNDROME

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In Wistar rats with rotenone-induced Parkinsonian syndrome (EPS), the features of the energy metabolism (aerobic link) and breathing regulation were examined. During the 2-week rotenone treatment, 16 animals ("resistive" animals, RA) were survived with signs of motor disorders (tremor, rigidity, bradykinesia and postural instability), 24 animals ("unresistive" animals, UA) died in a week. RA and UA were characterized by a phase changes in oxygen consumption (V_{O_2}). The first - hypometabolic - phase lasted up to 7 days in both groups. Then, in the RA group, there was a "switchover" (second phase), and the third - hypermetabolic - phase - began. The changes in the breathing were characterized by a stenoventilatory rebuilding in respiratory pattern, decreased minute ventilation (V_E) was accompanied by the drop of the respiratory volume (V_T) with a constant respiratory rate (f). In the 3rd day, with an increase in V_{O_2} , a reshaping of respiratory pattern was observed in isoventilatory mode, which was manifested in a significant augmentation in V_T and a decrease in f , without changes in V_E . On 7th day, RA demonstrated an inverse isoventilatory breathing adjustment, which was characterized by a slightly decreased V_E due to a decrement of V_T with an increased f . In the following terms, V_E and V_T remained unchanged at the background of elevated f . Thus, the obtained data indicated that the development of EPS was accompanied by significant phase shifts in both metabolism and breathing regulation, which were similar to changes during hypoxic adaptation.