The Application of Electro-Encephalogram in Experimental Studies of Cerebral Cortical Transplants of Rats
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In the experimental study of injury and transplant of rat cerebral cortex, how to correctly evaluate its functional recovery condition is an important problem. In this experiment 18 Sprague Dawley rats (body weight of 120-200g) were used. The cortical area with 0.6cm × 0.6cm posterior to the coronal suture of right fronto-parietal cortex was removed surgically. After two weeks, one month and two months post-operation, the animals were anaesthetized, a recording electrode was inserted subcutaneously into the lesioned cortical region. Another recording electrode was inserted into an corresponding appropriate position in the left fronto-parietal cortex subcutaneously. Changes in the electro-encephalogram on both sides of the cerebral cortex were recorded. Results obtained were used as self-control for comparison. The results showed: on low frequency band, frequency of the right side was markedly slower than that of the left (P<0.05) yet the power was obviously higher than that of the left (P<0.05), on the right side there were abnormally low frequency high amplitude wave, indicating that after right cortical injury there was functional deficit. In two weeks, one month and two months post-operation period, the abnormal electro-encephalogram waves did not have marked change, thus indicated that there was no tendency of recovery of the lesion. After two months the experimental rats were sacrificed, brains were taken, sectioned and stained with Nissl's stain. The results showed that there was still a damaged area in the right cortex. Experiment indicated that, electro-encephalogram determination could be used to establish rat cerebral cortical lesion model and is also a simplified, constant, effective electro-physiological observation index for rat cerebral cortical transplant experimental study. It could also be used for future brain transplant in clinical treatment of brain injuries as an index for observation of therapeutic efficacy.