Ultrastructural Study of the Changes in the Neuron of Brain Tissue Transplant
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In this experiment, E15 fetal rat cerebral cortex was transplanted to the areas 3,1 and 2 of cerebral cortex of adult wistar rats. Transplanted host animals were sacrificed 120 days after operation. The survived transplant and its adjacent brain tissue was taken out and underwent routine electron microscopy preparation and transmission electron microscope observation. No marked stratification was seen in the graft neuron, most neurons were differentiated. There were neurons at the border of the graft that showed obvious morphological changes. First group: Dwarfish neurons, cell body was fusiform in shape, rough endoplasmic reticulum and golgi apparatus were reduced, nucleoli occasionally shifted in position, synapses formed on the cellular membrane. The second group: cytoplasm was reduced, amount of lysosome increased, chromatin under the karyolemma agglutinated into lumps or beaded shape; some neurons lacked projection or had projections with marked changes, some neurons might give out several projections similar to that of normal axon, on the cell body we could see axo-somatic projections. The third group: degenerated necrotic neurons, the shape of nucleus was irregular, karyoplasm was dissociated, cytoplasm was sharply reduced, surface of cell body had no synapsis. Around the necrotic neurons cell fragmentations could be seen, the neuropil around it developed normally, comprising various components of normal mature neuropil. Amongst it was various cellular projections with normal morphological structure. We suggested that: (1) Host brain tissue — the border of transplant is a danger area to the survival, differentiation and development of neurons; (2) The delay in development of first group neurons is irreversible, the less stimulation received from other neurons, the less will be the impulse sent out; (3) The second group neuron retained residual function, is a kind of degenerating neuron. (4) Neurons in the transplant with abnormal morphology or with degenerative necrosis will necessarily produce effect to various composition, synaptic contents of the neuropil.