Survival of NGF-R Positive Neurons in the Transplant Area of Senile Dementia Rat
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Cholinergic neurons and nerve growth factor receptor (NGF-R) neurons coexisted in the basal forebrain. Whether increase in NGF causes the increase of nerve growth factor receptor, whether fetal nerve growth factor receptor positive neurons in the transplant area at the basal forebrain lesioned rats can survive have not been reported. This investigation employed quisquilis acid to destroy the left basal forebrain in SD rats. Two weeks after operation, we used avoid dark dodging test and diving platform test to confirm the establishment of senile dementia model in rats. Two weeks later, embryonic basal forebrain cellular suspension was implanted into the frontal lobe or basal forebrain in experimental rats. Animals survived two months after transplant, once again behavior tests were conducted. Two transplanted groups showed all animals with learning and memory improvement. We also observed the distributions of the survived NGF-R positive neurons and acetylcholine esterase positive neurons in the transplant area using immunohistochemical ABC method and acetylcholinesterase histochemical method. It was found in the result that no matter the transplant was in situ or in other cortical area, acetylcholinesterase positive neurons and positive fibers could be seen. In the cortical transplant, AchE positive fibers extended into neighbouring denervated cortical area. In NGF-R immunohistochemically reacted brain sections it was found there were NGF-R positive reactions in the transplant area and where the needle passed. There were also diffusely distributed and in groups of the NGF-R positive cells. Its number far exceeded the AchE positive cells. Such kind of cells, their shape, size, were similar to that seen in normal magnobasalis nucleus, but with shorter processes. In the transplant area and at the margin of the transplant area there were NGF-R positive fiber plexus. In them there were some NGF-R positive fibers which were very long, scattered in the transplant area. In the transplant area there were more NGF-R neurons than cholinergic neurons indicating some NGF-R neurons did not contain acetylcholinesterase, and there was also a possibility that during development, regeneration processes NGF content could increase and NGF-R positive neurons might increase.