뇌혈류의 저하는 기능적 불활성화 및 이에 따른 경뉴우런 변성(transneuronal degeneration)에 의해 이차적으로 발생함을 시사한다.

5. The Effect of Naloxone on the Size of Cerebral Infarction and the rCBF in Focal Cerebral Ischemia of Rats

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To evaluate the effect of naloxone on the focal cerebral ischemia, focal cerebral ischemia of rat was induced by an occlusion of middle cerebral artery (MCAO) and the size of infarction & rCBFs were measured at 24 hours after left MACO. The experimental groups were divided into a control (saline-treated) and naloxone-treated (low-dose and high-dose) groups. The rats were given 1 mg/kg iv (low-dose), 4 mg/kg iv (high-dose) of naloxone 30 min before MCAO and then infused continuously at rates of 0.5 mg/kg/hr (low-dose) and 2 mg/kg/hr (high-dose) over next 1 hour by an infusion pump. Coronal sections (20 μm-thick) of the rat brain were stained by 2% 2, 3, 5-triphenyltetrazolium chloride solution and the size of infarction was measured by planimeter. rCBFs were measured by an autoradiography using ^{14}C-iodoantipyrine. The results were summarized as follows:

1) There were no significant changes of blood pressure during the infusion of naloxone and there were no significant differences of pH, PCO_2, PO_2, blood glucose and rectal temperature among saline-, low-dose and high-dose naloxone-treated groups.

2) High-dose naloxone-treatment reduced significantly the size of infarction.

3) The serial 1 mm-band rCBF measurement of cerebral cortex showed that there was a slight tendency of a marginal rCBF improvement in a small portion of high-dose naloxone-treated group.

4) The areas of >50, 25-50, and <25 ml /100 g/min of rCBF values at the coronal sections 4, 6, 8 mm from the frontal pole were measured. The area of < 25 ml/100 g/min of rCBF was reduced significantly in the high-dose naloxone-treated group compared to the saline-treated group.

In summary, these results indicate that high-dose naloxone pretreatment reduced the size of infarction and improved the rCBFs in the focal cerebral ischemia of rats.

6. Balloon Test Occlusion of the Internal Carotid Artery with ^{99m}Tc-HMPAO Brain SPECT

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To period preoperatively the safety of permanent occlusion of an internal carotid artery with ^{99m}Tc-HMPAO brain SPECT from an objective point of view.

Twenty-four patients underwent balloon test occlusion (BTO) of the internal carotid arteries because of neck and skull base tumors. The authors assessed the uptake of both middle cerebral artery territories before and during BTO with ^{99m}Tc-HMPAO brain SPECT, and compared the results with other factors (neurologic examination, arterial stump pressure, and electroencephalogram).

Nineteen patients had not experienced neurologic deterioration or any problem during BTO. Their comparative uptakes of the middle cerebral artery territories were 95%-101% of the pre-BTO state. The remaining five patients showed severe neurologic symptoms such as transient hemiplegia and unconsciousness. Their comparative uptakes of the middle cerebral artery territories were 77%-85% of

the pre-BTO state, and were well matched with other factors.

^{99m}Tc-HMPAO brain SPECT before and during BTO seems to be a simple and objective method for prediction of permanent neurologic deficits when the comparative uptake of middle cerebral artery territories during BTO is lower than 85% of that before BTO.

7. ^{99m}Tc-HMPAO Brain SPECT for Evaluation of Brain Function Recovery after Intracarotid Arterial Urokinase Therapy Acute Cerebral Infarct

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이 병 인

To evaluate with ^{99m}Tc-HMPAO SPECT the brain function recovery of the infarcted area after early recanalization (less than 6 hours) of the occluded artery with intracarotid arterial urokinase therapy (ICAU).

Intracranial artery occlusion was confirmed in three patients with emergency carotid angiography done within the initial 6-hour period, after which recanalization of the occluded vessels was attempted with ICAU and 1 week after ICAU to evaluate the brain function of the infarcted area.

Complete recanalizating of the occluded vessel was seen in one patient after ICAU, and focal recanalizations were achieved in the other two patients. Before the ICAU, ^{99m}Tc-HMPAO brain SPECT showed decreased uptake of the infarcted area in all three patients, but the ^{99m}Tc-HMPAO brain SPECT performed 1 week after ICAU showed increased uptake of the recanalized area, suggesting brain function recovery and clinical improvement.

Brain function can be recovered if the occluded artery is recanalized within the initial 6 hour period using ICAU. This was confirmed with ^{99m}Tc-HMPAO brain SPECT in our three patients.

8. Leukocytic Accumulation in Acute Human Cerebral Infarction

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White blood cells (WBCs) have been demonstrated to contribute to postischemic damage in a number of tissues including heart, intestine and skeletal muscles. Recently were proposed evidences that leukocytes may be involved in the development of cerebral ischemic injury. To examine the involvement of WBCs in cerebral ischemia, we performed brain SPECT using leukocytes labelled with ^{99m}Tc-HMPAO.

Thirteen patients with acute cerebral infarction were studied. Thirty-six ml of venous blood of the patients was withdrawn and the purified WBCs were incubated for 30 minutes with ^{99m}Tc-HMPAO. Labelled WBCs were injected intravenously and brain SPECT was done in 4-6 hours. In eleven cases a well defined area of increased radioactivity was revealed in the corresponding infarcted lesion of the cerebral hemisphere. Eight of them showed intense uptake on SPECT image. The periods from onset of neurologic deficit ranged from 5 days to 12 days in these eight cases. Six of these eight had cardiogenic embolic infarction. Second SPECT was done in a patient at four weeks after ictus and still showed the intense uptake in the infarcted lesion.

We think that these findings indicate active migration and tracking of labelled WBCs in cerebral infarcts and implicate the role of leukocytes in the acute ischemic brain injury.