Investigation of Circulating Apoptotic Factors in Acute Ischemic Stroke Patients

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ABSTRACT

Ischemic stroke is a neurological disorder caused by the cessation of normal blood flow to the brain. The blockage of blood flow to the brain as the outcome of ischemic stroke would initially cause the shortage of nutrients supply to the neuron and glial cells, then eventually the damage and death of the cells. Investigation in animal models has demonstrated that apoptosis could play a role in cerebral ischemia. Its clinical significance in stroke patient has not been well established. In this research, we assayed factors related to apoptosis in peripheral blood of stroke patient. Stroke patients who had MRI study were recruited randomly at Changhua Christian Hospital. Blood samples were taken after informed consent obtained. DNA was extracted from the plasma and quantified PCR. Apoptotic factors were analyzed by western blots with specific antibodies and activities of caspase 3/7 were also investigated. Sixteen samples were taken from 7 stroke patients and 4 control patients. Patients with gray matter infarction showed higher level of soluble TNF-α . Plasma from patients with small white matter infarction also showed lower level of soluble TNF-α and lower caspase 3/7 activities. Soluble TNF-α has greater affinity for TNF-R1 receptor and TNF-R1 receptor has been suggested to be pro-apoptotic. Interestingly the activities of caspase 3/7 are correlated to apoptosis. These results provide apoptotic factors can be detected in the plasma from patients with acute ischemic stroke and might be related to large grey matter infraction.

Keywords : Ischemic stroke、peripheral blood、apoptosis、after、cerebral infarction、tumor necrosis factor (TNF)、membrane TNF-α (mTNF-α)、soluble TNF-α (sTNF-α)

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