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ROLE OF SERUM NEURON SPECIFIC ENOLASE (NSE) TO DIFFERENTIATE ISCHEMIC STROKE FROM HEMORRHAGIC STROKE AND ITS CORRELATION WITH BRAIN DAMAGE VOLUME

Abstract

Stroke is an emergency condition requiring immediate procedure by a neurologist. Differentiating the type of stroke (infarct or hemorrhagic stroke) and determining the extent of brain damage at the onset of the seizure is an appropriate action to determine therapy and prognosis. Increased serum NSE level in stroke can be expected to replace CT scan in differentiating stroke types at the onset of the seizure during which CT scan remains unclear and to provide assistance in determining the extent of brain damage, particularly in areas where CT Scan and MRI are unavailable. The objective of this study was to examine and compare serum NSE level in ischemic and hemorrhagic stroke patients according to lesion volume, and to analyze correlation between serum NSE level and lesion volume in CT Scan as gold standard. We examined serum NSE level of 62 acute stroke patients, comprising 31 ischemic stroke patients and 31 hemorrhagic stroke patients 24-48 (35.7 ± 8.3) hours after onset. Serum NSE level in acute stroke patients varied between 1.1 - 36 (7.45 ± 6.5) ng/ml. Serum NSE level in ischemic stroke group varied between 1.1 - 36 (6.24 ± 6.09) ng/ml, while in hemorrhagic stroke patients it varied between 1.1 - 25.3 (8.66 ± 6.76) ng/ml. CT scan lesion volume in acute stroke varied between 2.5 - 77.5 (25.5 ± 20.2) ml, in which in ischemic stroke group it was varied between 2.5 - 50.8 (15.9 ± 14.9) ml and in hemorrhagic stroke group the variation was between 7.3 - 77.5 (35 ± 20.5) ml. The difference of mean serum NSE level between ischemic and hemorrhagic stroke groups was found to be insignificant (p = 0.144). Significant positive correlations in serum NSE level between ischemic stroke and CT scan lesion volume (r = +0.993; p<0.001; Pearson test), and could be used to predict brain damage volume using NSE predictive model formula = 0.406.lesion volume, and also between serum NSE level in hemorrhagic stroke and CT scan lesion volume (r = +0.894; p<0.001; Pearson test), with NSE predictive model formula = 0.294 lesion volume. The whole cases (ischemic and hemorrhagic stroke) and CT scan lesion volume had significant positive correlation (r=+0.890; p<0.001; Pearson test), with NSE predictive model = 0.286 lesion volume. In conclusion, serum NSE level in acute stroke patients (24-48 hours) after onset can be used to estimate the extent of brain damage (lesion volume), but it cannot be used to differentiate the type of stroke.

Keyword : stroke, ischemic, stroke, hemorrhagic, stroke, neuron, specific, enolase, (NSE), brain, damage,

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