CDP-choline treatment increases circulating endothelial progenitor cells in acute ischemic stroke.

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Abstract

OBJECTIVES: The increase in circulating endothelial progenitor cells (EPCs) is associated with a better outcome in patients with acute ischemic stroke. CDP-choline (citicoline) increases brain plasticity after experimental stroke. Therefore, we study if citicoline treatment could increase the EPC concentration after ischemic stroke.

METHODS: Forty-eight patients with a first-ever non-lacunar ischemic stroke were consecutively included in the study within 12 hours of symptoms onset. Patients received treatment (n=26) or non-treatment (n=22) with oral citicoline (2000 mg/day) from acute phase of ischemic stroke and for 6 weeks. EPC colonies were quantified as early outgrowth colony forming unit-endothelial cell (CFU-EC) at admission (before citicoline treatment) and day 7. We defined the EPC increment during the first week as the difference in the numbers of CFU-EC between day 7 and admission.

RESULTS: CFU-ECs were similar at baseline between patients treated and non-treated with citicoline (7·7±6·1 versus 9·1±7·3 CFU-EC, P=0·819). However, patients treated with citicoline and recombinant tissue-plasminogen activator (rt-PA) showed a higher EPC increment compared to patients treated only with citicoline or non-treated (35·4±15·9 versus 8·4±8·1 versus 0·9±10·2 CFU-EC, P<0·0001). In a logistic model, citicoline treatment [odds ratio (OR), 17·6; confidence interval (CI) 95%, 2·3-137·5, P=0·006] and co-treatment with citicoline and rt-PA (OR, 108·5; CI 95%, 2·9-1094·2, P=0·001) were independently associated with an EPC increment ≥4 CFU-EC.

CONCLUSION: The administration of citicoline and the co-administration of citicoline and rt-PA increase EPC concentration in acute ischemic stroke.

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