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USEFULNESS OF TRIPHASIC PERFUSION CT IN THROMBOLYTIC THERAPY WITH INTRAVENOUS RECOMBINANT TISSUE PLASMINOGEN ACTIVATOR FOR ACUTE ISCHEMIC STROKE

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INTRODUCTION Intravenous (i.v.) thrombolysis for acute ischemic stroke has been investigated in several clinical trials without information on collateral flow and perfusion deficit in the ischemic areas. The therapeutic time window may vary from patient to patient depending on these factors. Triphasic perfusion CT (TPCT) can provide as good information as conventional angiography. It should be possible to assess the safety and efficacy of thrombolysis for ischemic stroke within 3 or 7 hours of onset according to the extent of perfusion deficit on TPCT.

SUBJECT AND METHODS The precontrast CT was taken and then TPCT was performed after power injector-controlled i.v. administration of contrast media in 17 patients with acute middle cerebral artery (MCA) stroke. Sequential scans of early, middle, and late phases were obtained. It took 5 minutes for the whole procedure. Depending on collateral blood flow, perfusion deficit was graded as “severe perfusion deficit (SPD)” or “moderate perfusion deficit (MPD)”. All patients were treated with 0.9 mg/kg of i.v. recombinant tissue plasminogen activator. The patients were divided into two groups according to the extent of SPD: group I (SPD ≤ 33% of MCA territory) and group II (33% < SPD ≤ 50%). Thirteen patients of group I were treated within 7 hours of onset and four patients of group II within 3 hours.

RESULTS Mean time lapse to thrombolysis was 4.2 hours (1.5-7.0) in group I and 2.2 hours (1.9-2.5) in group II. The initial NIH stroke scale (NIHSS) score was 12.1 (6-20) in group I and 19.0 (18-21) in group II. The initial NIHSS score was well correlated with the extent of SPD and MPD. Eight patients (47.1%) improved by 4 or more points from baseline NIHSS score within a day: seven of group I and one of group II. The patients with MPD 50% or more of the MCA territory had a higher chance of early improvement than those with MPD less than 50% (4/4 vs. 4/13). No fatal hemorrhage developed. Only one patient (5.9%) had symptomatic small basal ganglia hemorrhage after thrombolysis.

CONCLUSION Thrombolysis may be safely done within 3 or 7 hours according to the extent of SPD on TPCT. A large extent of MPD on TPCT may predict early improvement after thrombolysis.

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