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Dipyridamole Cerebral Flow Stress Test

Evaluating Ischemic Cerebrovascular Diseases

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Purpose: To detect the clinical value of dipyridamole cerebral blood flow stress test in cerebrovascular diseases (CVD). **Materials and Methods:** Nineteen patients (9 male, 10 female, mean age=65) who were diagnosed as CVD were included. One suffered from infarct, two suffered from thrombosis, one feel dizziness. All 4 performed rest and stress test. The other 15 were VBI, 9 of them performed stress test. Rest and stress test were done two-day method using Elscint Apex SP-6 SPECT equipped with low energy all purpose collimator. Rest perfusion imaging was started 30 min after injecting 1.11 GBq ^{99m}Tc -ECD. Dipyridamole stress test was done within one week. 0.56 mg/Kg dipyridamole was injected intravenously during 4 min, the same dose of ECD was injected 2 min later. The acquisition started 30 min later with the same parameter. Heart rate, ECG and the patient's complaint were monitored 2 min before and after dipyridamole. After correction for attenuation, transverse, coronal and sagittal slices were reconstructed. Eighteen ROIs were drawn symmetrically on cingulate, frontal, temporal-parietal, temporal, occipital, vision cortex, basal ganglia, superior frontal and parietal on the 3rd, 6th, 9th transverse slices, selecting the contralateral as the reference region. The counts per pixel in each ROI were divided by the counts of the mirror region to obtain the relative uptake ratio. We think it abnormality when the ratio is above 1.1 or below 0.9. The sensitivity for rest and stress rCBF test was compared. **Results:** rCBF was decreased at 10 of 19 patients (sensitivity 52.6%). 14 had low rCBF after dipyridamole (sensitivity 72.3%), Among the patients who studied stress test, 6 had normal rCBF at rest and low rCBF after stress. The abnormal area was enlarged after dipyridamole for 1 patient, 2 improved and 2 unchanged. 8 of 15 VBI had normal rCBF at rest (sensitivity 53.3%). 9 of 15 VBI performed stress test. rCBF was normal at rest for 5 patients, rCBF was decreased after stress, it was improved for one (sensitivity after dipyridamole 80%). **Conclusion:** Dipyridamole can increase the sensitivity of SPECT perfusion imaging; It maybe reflex the reaction of the cerebrovascular; It is a safe, economic, effective method to detect the rCBF of ischemic CVD, it is worth studying further.