

Acetazolamide induced myocardial ischemia in patients with severe coronary artery disease

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Acetazolamide (ACZ)-augmented brain SPECT is commonly used for evaluating cerebral vascular reserve in patients with cerebrovascular disease. ACZ may cause myocardial ischemia in patients with coronary artery disease. To evaluate the risk of induction of myocardial ischemia with ACZ-augmented myocardial SPECT, we performed combined ACZ-augmented TI-201 myocardial SPECT (ACZ-myo SPECT) with Tc-99m HMPAO brain SPECT in patients with severe coronary artery disease. *Methods:* Nine patients underwent combined ACZ-myo SPECT with Tc-99m HMPAO brain SPECT. (1) For qualitative analysis, SPECT images were divided into 13 segments to calculate the total defect scores. (2) Six ROIs were placed on the slices in the myocardial SPECT short-axis images and the regional uptake ratio was obtained as the ratio of the mean counts in the myocardium to the maximal count in the slice. The total defect score and regional uptake ratio of ACZ-myo SPECT were compared with those of early and delayed dipyridamole TI-201 myocardial SPECT (DP-TI SPECT) images. *Results:* (1) In the 21 coronary artery territories with coronary stenosis $\geq 75\%$, the total defect score in ACZ-myo SPECT, early and delayed DP-TI SPECT images were $3.52 \pm 4.14^*$, $4.19 \pm 4.65^*$ and 2.25 ± 3.34 , respectively (*: $p < 0.05$ vs. delayed DP-TI SPECT images). (2) In 44 of 54 ROIs with coronary stenosis $\geq 75\%$, the regional uptake ratio of ACZ-myo SPECT, early and delayed DP-TI SPECT images were $0.670 \pm 0.166^{**}$, $0.677 \pm 0.194^{**}$, 0.721 ± 0.178 , respectively (**: $p < 0.01$ vs. delayed DP-TI SPECT images). Systolic blood pressure fell at 11 min after ACZ infusion without electrocardiographic ST-T changes or chest pain. *Conclusion:* As ACZ has the potential to cause myocardial ischemia, ACZ-augmented brain SPECT should be performed with caution in patients with severe coronary artery disease associated with cerebrovascular disease.

Key words: acetazolamide, myocardial ischemia, coronary artery disease, cerebrovascular disease, SPECT