

Outcome of Patients with Aneurysmal Subarachnoid
Hemorrhage using Acetazolamide-enhanced
Brain Perfusion SPECT(ACZ SPECT)

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Purpose: Vasospasm(VS) is a complication of aneurysmal subarachnoid hemorrhage(aSAH). But patients(pts) with angiographic VS dose not always present neurologic symptoms. We assess the role of ACZ SPECT with Tc-^{99m} ECD for predicting the prognosis of pts with aSAH. **Materials and Methods:** Two SPECT studies(a baseline with 740 MBq and ACZ SPECT with 1480 MBq) with image subtraction were performed on 21 pts with aSAH. All pts had brain CT and angiogram. Vasoreactiviy(VR) on ACZ SPECT, perfusion defect(PD) on baseline SPECT, and VS on angiogram were correlated with the initial Hunt-Hess grade, extent of SAH(unilateral or bilateral) on CT, and clinical outcome[Glasgow outcome scale(GOS)]. VR was considered decreased when cerebral-cerebellar uptake ratio difference from baseline to ACZ SPECT was greater than 2SD of normal control values. **Results:** Decreased VR was observed in 38%(8/21), PD in 81%(17/21), and VS in 38%(8/21). The preserved VR group showed better GOS(92%; 12/13) and the decreased VR group tended to show poorer GOS(62.5%; 5/8). Extensive SAH was more frequently seen in the decreased VR group(87.5%; 7/8) than in the preserved VR group(30.7%; 4/13) (p=0.017). The decreased VR group showed poorer Hunt-Hess grade than the preserved VR group did(p=0.041). The presence of PD and VS did not show good correlation with GOS, extent of SAH, and Hunt-Hess grade(p=ns). VR reflected the pts' outcome better than the VS in all of the VR/VS mismatched cases(n=6) **Conclusion:** Our data show that decreased VR on ACZ SPECT dose not always reflect the vasospastic condition. But pts with decreased VR reflect poorer outcome better than the pts with angiographic VS do. Therefore, ACZ SPECT is a valuable, noninvasive test for predicting the prognosis of pts with SAH.