

10-year Experience of Acetazolamide-challenged CT Perfusion Assessment of Moyamoya Syndrome Revascularization Surgery

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Introduction

Moyamoya syndrome is related to stenosis or occlusion of the terminal internal carotid artery, proximal anterior or middle cerebral artery. Common clinical presentations include TIA, stroke and seizure.

Revascularization surgery can provide alternative pathway to the affected territory by indirect revascularization (pial synangiosis) or direct revascularization (superficial temporal artery-middle cerebral artery bypass).

Acetazolamide-challenged CT perfusion can be used to select patients with reduced cerebrovascular reserve for surgery and assess the disease progression.

The objective of this study is to assess the efficacy of revascularization surgery of Moyamoya syndrome patients in our institution.

Methodology

Patients with unilateral revascularization surgery and acetazolamide-challenged CT Perfusion performed before and after the operation in our institution from 2008 to 2018 were included.

The pre-operation baseline and post acetazolamide-challenged cerebral blood volume (CBV), cerebral blood flow (CBF) and mean transit time (MTT) ratio were compared with the post-operation ratio (Operated hemisphere/Non-operated hemisphere).

Change of the baseline and post acetazolamide-challenge CBF and MTT ratio can reflect cerebrovascular reserve and correlate with the clinical findings.

Results

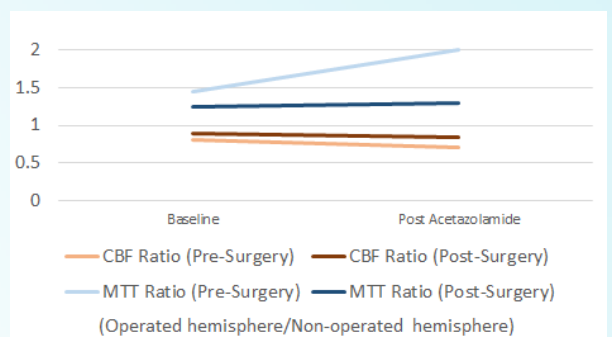
No. of Patient		7
Gender	M	3
	F	4
Age (Years)	Median	52
	Range	38-59
Revascularization	Indirect	5
	Direct	2

All patients had clinical improvement or no recurrence of vascular events after the operation.

Baseline and post acetazolamide-challenged mean CBV ratio were normal and similar before and after revascularization.

Pre-operation baseline mean CBF and MTT ratio (0.80 & 1.44) were abnormal with paradoxical change after acetazolamide-challenged (0.70 & 2.00), which reflected poor cerebrovascular reserve.

Increased post-operation baseline mean CBF ratio and decreased post-operation baseline mean MTT ratio (0.89 & 1.24) with reduction of paradoxical change after acetazolamide-challenged (0.84 & 1.29) reflected improvement of cerebrovascular reserve and were compatible with clinical recovery.



Conclusion

Acetazolamide-challenged CT perfusion can provide quantitative assessment of the efficacy of revascularization surgery which is compatible with clinical findings.

