Outcome of Superficial Temporal Artery to Middle Cerebral Artery Anastomosis In Acute Period of Cerebral Infarction

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PURPOSE

- Superficial temporal artery to middle cerebral artery(STA-MCA) anastomosis had been performed for the prevention of secondary stroke in selected cases at chronic stage.
But there is a little evidence about the effect of surgery.
- The authors performed urgent STA-MCA anastomosis in acute period for the patients who was in progressive stroke or failed to fibrinolytic therapy.
- We investigated the effect of bypass surgery in acute period and good prognostic factors with retrospective cohort study.

MATERIALS AND METHODS

- Emergency STA-MCA anastomosis**
: major vessel occlusion cases for 9 years.
: single center
=> Total 83 patients
- Diffusion/perfusion Magnetic Resonance Image (MRI) and catheter angiography findings** are major determinants of decision making of surgery.
- Surgery candidate**
: Only the patient who had **small volume of infarction (less than 30cc)** and **large volume of perfusion defect** with MRI
= Diffusion/Perfusion mismatching
=> Large ischemic penumbra

RESULTS I

- Favorable factors for good prognosis** were investigated about radiologic findings, neurologic status, surgery timing.
- Mean age was 59 and male female ratio was 29:12.
- Initial national institute of health stroke scale (NIHSS) was 2 to 22.
- Mean volume of infarction was 8.3cc (1 to 40 cc) and mean time to peak(TTP) delay area volume was 75cc.
- NIHSS was higher in perforator infarction group (9.4 vs 3.6).
- Median surgery interval from ictus to reperfusion was one day (0 to 8 day).
- Post operative perfusion MRI at 1 week revealed full recovery of TTP delay in almost cases.
- There was no case of post-operation intracerebral hemorrhage or mortality.

RESULTS II

< post operative 3D CT angiography image >

<Outcomes: modified Rankin Scale >

< Good Outcome >

Mismatching : small diffusion(infarction) volume / large penumbra

< Poor Outcome >

1. Matching ,2.Large diffusion(infarction) volume
3.Perforator involve

CONCLUSION

- Urgent STA-MCA anastomosis showed good outcome in acute period of infarction.
- Small infarction volume in the watershed area with large perfusion defect can be a good candidate for bypass surgery.
- It can improve the blood flow in critical area with little risk of reperfusion injury because of low flow characteristics.
- Bypass surgery in acute period of infarction can be a good option because it has a considerable long time window.

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