Title: **New concept of central cord syndrome; Histological and behavioral study after anterior spinal artery occlusion in rat**

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Abstract:

Introduction:

Central cord syndrome is the most common type of incomplete spinal cord injury. There were no experimental study and behavior tests after anterior spinal artery occlusion in cervical spinal cord. The purposes of this study were to verify role of anterior spinal artery blood supply in cervical spinal cord injury and to investigate behavior change after anterior spinal artery occlusion in cervical spinal cord.

Material and method:

We performed anterior spinal artery occlusion with laser irradiation to 275- 300 gm Adult female Sprague-Dawley twelve rats C5-6 corpectomy. Motor & sensory and other behavior tests were checked every week for 6 weeks.

Results:

On histological study, anterior 68.8±5.6 % white & gray matter was nectrotized.

On motor recovery, forelimb proximal was 2.0±0.7 and distal was 1.0 ±0.8 at 1 week after occlusion. It was progressively improved proximal 3.5±0.6 and distal 2.2±1.1 at 6 weeks after occlusion. Hind limb proximal was1.5±1.2 and distal was 1.4±1.1. It was improved proximal & distal same as 3.5±0.5 at 6 weeks after occlusion.

On sensory change, forelimb proximal and distal score were almost same 1.6±1.2 at 1 week after occlusion. It was improved proximal 2.2±1.4 and distal 1.9±1.5 at 6 weeks after occlusion. Hind limb sensory proximal & distal score were the same 2.2±1.8 at 1 week after occlusion and 3.1±0.9 at 6 weeks after occlusion.

Conclusion:

Forelimb motor weakness was more profound than hindlimb's after anterior spinal artery occlusion. Forelimb and hindlimb motor weakness were progressively improved for 6 weeks. It seems central cord syndrome phenomenon in cervical spinal cord injury.

Anterior spinal artery vascular impairment is very important pathophysiological role in central cord syndrome of cervical spinal cord injury.