

## Morphometry of Cervical Spinal Cord in Rabbit Using Design-Based Stereology

**Authors :** Hamed Chavoshi Pour, Javad Sadeghinejad

**Abstract :** The spinal cord is a long structure that starts at the end of the medulla oblongata and is located within the vertebral canal. Physiologically, the spinal cord connects the brain with the peripheral nervous system for sensory and motor activities. The cervical spinal cord is an area of particular interest in medicine and veterinary medicine due to the high prevalence of diseases in this region. This study describes the morphometric features of the cervical spinal cord in rabbits using design-unbiased stereology. The cervical spinal cords of five male rabbits were dissected, and slabs were taken according to systematic uniform random sampling. Each slab was embedded in paraffin and cut into a 6- $\mu$ m thick section, and stained with cresyl violet 0.1% for stereological estimations. The total spinal cord volume, volume fraction of grey and white matter, and also dorsal and ventral horns were estimated using point counting and Cavalieri's estimator. The total cervical spinal cord volume was  $0.98 \pm 0.07$  cm<sup>3</sup>. The relative volume of white matter and grey matter was  $70.6 \pm 1.7\%$  and  $29.31 \pm 1.67\%$ , respectively. The dorsal horn and ventral horn volume were  $13.86 \pm 1.36\%$  and  $14.9 \pm 0.62\%$  of the whole cervical spinal cord. This knowledge of rabbit spinal cord findings may serve as a foundation for a translational model in spinal cord experimental research and provide basic findings for the diagnosis and treatment of spinal cord disorders.

**Keywords :** stereology, spinal cord, rabbit, cervical

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