3 - Clinical Anatomy

OC-061 - (23943) - TEMPORAL AND SPATIAL VARIATIONS IN CEREBROSPINAL FLUID PRESSURE DURING ELECTRICAL STIMULATION IN BEAGLES

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Understanding cerebrospinal fluid (CSF) dynamics is crucial in the fields of neurosurgery and physiology. The myodural bridge (MDB), a dense connective tissue structure linking the suboccipital muscles to the cervical spinal dura mater, has recently emerged as a novel regulatory component of the CSF dynamic system. Underscoring the need to further investigate the underlying mechanisms by which the MDB influences CSF dynamics
We aimed to investigate the temporal and spatial variations in CSF pressure during electrical stimulation of the obliquus capitis inferior muscles in Beagles. Pressure catheters were surgically implanted to monitor the pressure at four distinct locations: the right lateral ventricle pressure (LVP), the right frontal pressure (FPP), the right occipital pressure (OPP), and the lumbar subarachnoid pressure (LSP).

The CSF pressure exhibited significant spatial variations, with increases in the first peak of LVP, FPP, and OPP. The mean values of FPP, OPP, and LSP were significantly elevated. Simultaneous monitoring of cranial and spinal CSF pressures revealed temporal changes in the propagation of pressure waves. The first peak of intracranial CSF pressure occurred earlier than that in the LSP. Within the cranial cavity, the first peak time of OPP was the earliest, whereas that of FPP was the latest.
The influence of MDB on CSF circulation is systemic, exhibiting a dependence on anatomical structures and the distance from the occipito-atlantal cistern. The CSF flow generated by MDB propagates as pressure waves, with the frontal pole acting as the primary focal region for CSF pressure concentration.

Palavras-chave : Cerebrospinal fluid circulation, Myodural bridge