14 - Neuroanatomy

OC - (23978) - THE MICROSCOPIC AND ULTRASTRUCTURAL VALIDATION OF AN INTERMEDIATE LEPTOMENINGEAL LAYER IN THE HUMAN CNS

A. Kumar (India)[1]; C. Kumari (India)[2]; A. Ganpathy (India)[3]

1 - All India Institute of Medical Sciences-Patna; 2 - Postgraduate Institute of Medical Education and Research (PGIMER); 3 - All India Institute of Medical Sciences, New Delhi

Ashutosh Kumar
Patna

Chiman Kumari
Chandigarh

Arthi Ganpathy
New Delhi

None
A recent study presented microscopic evidence of an additional leptomeningeal layer between the arachnoid and pia mater, which divides the subarachnoid space (SAS) containing cerebrospinal fluid (CSF) into two distinct functional compartments. The findings were primarily based on data from mouse brains, with limited evidence from humans. Macroscopic examination of this layer in the human central nervous system remains unexplored.
Fresh postmortem human brain specimens (n=42) and 10% formalin-fixed cadaveric specimens (n=6) were obtained through standard operative procedures and dissected in situ. The dissection process was recorded step-by-step on video. Additionally, postmortem/cadaveric human spinal cord specimens were examined. The separation of meningeal layers was confirmed by injecting dyes (Indian ink or trypan blue) and air.
The intermediate leptomeningeal layer, located between the arachnoid and pia mater, was confirmed in all specimens. This layer divides the subarachnoid space into two distinct structural compartments. Cerebrospinal fluid (CSF) was present in both the outer and inner compartments, with the outer compartment containing CSF in all specimens, and the inner compartment in a limited number of postmortem brain specimens. The intermediate layer appeared as a thin, translucent, glistening membrane that extended into the sulci and formed a perivascular sheath around the vessels.
This study provides macroscopic evidence of an intermediate leptomeningeal layer in the human central nervous system, which divides the subarachnoid space into two compartments. It also offers valuable insights into neuroanatomical approaches and the macroscopic visualization of this newly discovered meningeal layer.

Palavras-chave : Meninges, Human, Central Nervous System