

3736139 SCAN/D : MAJOR : ANATOMY : Ph.D. (ANATOMY)

KEY WORD : CHOROID PLEXUS / COMMON TREE SHREW / ULTRASTRUCTURE /
MICROANGIOARCHITECTURE

THAWORN MINGSAKUL : ULTRASTRUCTURE AND ANGIOARCHITECTURE OF THE
CHOROID PLEXUS IN COMMON TREE SHREW (*Tupaia glis*). THESIS ADVISOR: REON SOMANA,
MD., Ph.D., SOMBOON SRUNGBOONMEE, D.V.M., Ph.D., KANOK PAVASUTHIPASIT MD., Ph.D.,
BOONSIRM WITHYACHUMNARNKUL MD., Ph.D. 114 p. ISBN 974-661-678-1

The ultrastructure of the tree shrew choroid plexuses were elucidated by conventional SEM and TEM. It was found that shape of the choroid plexuses (CPs) conformed to the corresponding cerebral ventricles. The CPs of the lateral (LVCP), third (3VCP) and fourth ventricles (4VCP) appeared as C-, tongue-, and T-shapes, respectively. The choroid plexuses' shapes were different, but their ultrastructures were similar. The CP was composed of choroidal epithelium, connective tissue and blood vessels. At the CP's ventricular surface, the epiplexus or Kolmer cells were observed. They appeared pleomorphism as round, bipolar or stellate shape with cytoplasmic processes. Their cytoplasm contained numerous vacuoles which appeared to be undergoing phagocytosis. Microvilli with expanded terminals and bleb-like structure could be associated with the CSF production. Pinocytotic vesicles within cytoplasm could be associated with absorption of some substance from the CSF. Tight junctions at apical aspect of the choroidal epithelial and endothelial cells as well as pial processes may form a barrier between blood and CSF in the ventricles.

The vascular pattern of all plexuses were demonstrated with vascular corrosion cast/SEM. The main arterial supply of the LVCP was the anterior choroidal artery, a branch of the internal carotid artery, whereas the posteromedial choroidal artery (PMChA) was the supplement arterial supply. The 3VCP received arterial supply from the PMChA and PLChA which originated from the posterior communicating and posterior cerebral arteries, respectively. The tree shrew 4VCP received blood from the anterior and posterior choroidal arteries of the hindbrain, a branch of the antero-inferior cerebellar and of the superior cerebellar arteries, respectively. Most of the venous blood from the LVCP was drained into the superior choroidal vein (SChV) and the rest of blood was emptied into the inferior choroidal vein. The 3VCP venous blood was drained into the great cerebral vein of Galen through the SChV and then the internal cerebral vein. The lateral choroidal veins of the hindbrain carried the blood from the 4VCP to the transverse sinus. Although the choroidal capillaries were fenestrated type, their tight junctions could act as blood-CSF barrier. High anastomosis of capillary loops could decrease local blood flow and provide more effective exchange. The arterio-venous anastomoses was identified in the present study. However, the vascular sphincters at arteriolar branching sites were found. These vascular sphincters could act as local blood flow controllers. Garland capillaries surrounded both arteries and veins and they may be vasa vasorum of the blood vessels. However, their functions have not been elucidated. Moreover, the continuity of the secretory cycle is difficult to trace by conventional EM. Some of these points require further investigation.