Meninges Encyclopedia Article

Meninges

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Meninges

The meninges are a series of three membranes covering the **brain** and **spinal cord** that act to protect and partition the **central nervous system** (CNS). The membranes comprising the meninges are the dura mater, arachnoid layer, and the pia mater.

In addition to its protective function, the meninges protect the vascular supply to the CNS and provide a protective barrier for **cerebrospinal fluid**.

The dura mater consists of a periosteal layer, a meningeal layer, and a dural sinus. The dura mater is tough and fibrous and offers a great deal of protective and cohesive structural support to the CNS. The web-like arachnoid mater--also known as the arachnoid layer--is divided into the subdural space, subarachnoid space, and arachnoid villi. The arachnoid layer is much less fibrous and more fragile than the overlying dura mater. The pia mater is the innermost layer of the meninges.

The dural layer acts as a septum to partition the brain. The dural septa consists of a folded layer of dura matter (a falx) that in the form of a falx cerebri, for example, creates a longitudinal fissure separating two **cerebral hemispheres**. The falx cerebelli is another fold of the dura mater that acts to separate the cerebellar hemispheres. The tentorium cerebelli covers, supports, and protects the occipital lobes and **cerebellum**.

Inflammation of the meninges (meningitis) can be a serious, life-threatening, condition. Meningitis may result from a number of causes and is associated with a number of disease processes. For example, infectious meningococcal meningitis is caused by a meningococci bacterial infection. Viral infections may result in viral meningitis. With meningitis, the neck often becomes rigid and is accompanied by a severe **headache** caused by increased pressure on the meninges resulting from inflammation. The increased intracranial pressure may also cause severe vomiting and disorientation. Diagnosis of the cause of meningitis often requires the examination of cerebrospinal fluid enclosed within the membrane. The cerebrospinal fluid, usually obtained by puncturing the meninges of the spinal cord at the level of the lumbar spine (lumbar puncture), can be directly examined and tested for specific infective agents.