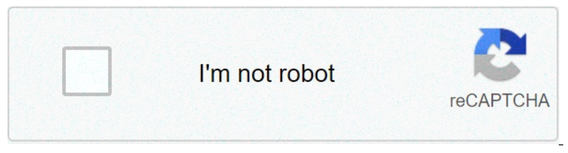


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# Protective layer of brain

Innermost protective layer of brain. Innermost protective layer of the brain. Outermost protective layer of brain. Outer protective layer of brain. Middle layer of protective brain tissue. Middle layer of protective brain. Which of the following is the outermost protective layer of the brain. What is considered a protective meningeal or layer of the brain.

The brain occupies the cranial cavity and is covered by membranes, fluid and bones of the skull. Although the various brain regions communicate and function together, the brain can be divided into distinct areas for ease of study (Fig. 6-1, Table 6): * The cerebro is the largest part of the brain. It is divided into cerebral hemispheres on the right and left by a deep inconvenient called longitudinal slit (figure 6-2). Each hemisphere is further divided into lobes. * Dientphalon is the area between brain hemispheres and brain stem. It includes thalamus and hypothalamus. * The stem of the brain connects the cerebro and the diencephalus with the spinal cord. The upper part of the brain stem is the midbrine. The PONS is less than the Mercenary, followed by the oblonged marrow. The PONS connects the Midbrain with the Merlulla, while the spinal cord connects the brain with the spinal cord through a large opening in the base of the skull (foramen magnum). * The cerebellum is immediately under the back of the brain hemispheres and is connected with the cerebro, the brain stem and the spinal cord through the PONS. The word cerebellum means "the brain. Figure 6-1 Brain, sagittal section. The main divisions are shown. Figure 6-2 External brain surface, superior view. The division into two hemispheres and lobes is visible. Table 6 Organization of cereberal protective structures of the brain and spinal cord Meninges are three layers of connective tissue that surround both the brain and spinal cord to form a complete fence (Fig. 6-3). The outermost of these membranes, the Dura Mater, is the most often and hardest of the meninges. (Mater comes from the Latin meaning â€ œMother, â€ "Referring to the protective function of the meninges; DURA means â€ œHard.Â €) around the brain, the Dura Mater is in two layers and the outside The layer is melted to the bones of the skull. In some places, these two separate layers to provide venous channels, called didaple breasts, for draining blood from the brain tissue. The central layer of the meninges is the arachnoid. This membrane is freely annexed to the deepest of Weblike fibers, allowing a space for the movement of the cerebrospinal fluid (CSF) between the two membranes. (Arachnoid is called by the Latin word for spider because of its webking appearance). The innermost layer around the brain, the Pia Mater, is attached to the nervous tissue of the brain and spinal cord and follows all the contours of these structures (see Fig. 6-3). It is made of a delicate connective tissue (PIA Meaning â€ œtenderâ€ œsoftâ€). The Pia Mater holds blood vessels that provide nutrients and oxygen to the brain and spinal cord. Figure 6-3 Front section (coronal) of the upper part of the head. This fluid also brings nutrients to the cells and transports waste productscells. The QSF flows freely through passageways in and around the brain and spinal spinal and finally flows into the subarachnoid space of the meninges. Much of the fluid then returns to the blood through projections called villi arachnoids in the hard sinuses (see Figs. 6-3 and 6-4). Ventricles CSF forms in four spaces within the brain called ventricles (Fig. 6-5). A vascular network in each ventricle, the colloid plexus, forms QCS by blood filtration and cell secretion. The four ventricles that produce QCS spread irregularly throughout the various parts of the brain. The largest are the lateral ventricles in the two cerebral hemispheres. Their extensions in the lobes of the cerebrum are called horns. These coupled ventricles communicate with an intermediate space, the third ventricle, through openings called foramine. The third ventricle is surrounded by the diencephalon. Continuing from the third ventricle, a small channel, called the cerebral aqueduct, extends through the midbrain into the fourth ventricle, which is located between the brain stem and the cerebellum. This ventricle is continuous with the central canal of the spinal cord. In the roof of the fourth ventricle are three openings that allow the escape of the CSF to the area around the brain and spinal cord. Cerebrospinal fluoresor is a clear fluid that circulates in and around the brain and spinal cord (Fig. 6-4). The function of the CSF is to support the nervous tissue and cushion the shocks that would otherwise hurt these delicate structures. Figure 6-5 Ventricles of the brain. Three views are shown. Figure 6-4 Flow of cerebrospinal fluid (CSF). The black arrows show the flow of CSF from the colloid plexuses and back to the blood in the durable breasts; the white arrows show the flow of blood. (The actual passages through which the flows of the CSF are narrower than those shown here, which have been expanded for visibility.) Narrow joints present in the blood-brain barrier separate circulating blood from the cerebrospinal fluid, regulating the diffusion into the brain. Describing Blood Brain Barrier Function Key Takeaways Key Points Blood â Brain Barrier (BBB) endothelial cells restrict the passage of substances from the bloodstream to a greater extent than endothelial cells in capillaries elsewhere in the body. BBB derives from the selectivity of the tight joints between endothelial cells in the central nervous system (CNS) vessels that limit the passage of solutes. Several areas of the human brain are not protected by BBB, including the circumventricular organs. The tight junctions are composed of transmembrane proteins such as occludin and claudin. BBB effectively protects the brain from many common bacterial infections. However, since antibodies and antibiotics are too large to cross BBB, the brain infections that occur are often difficult to treat. Key terms astrocyte: A neuroglial cell to Star. Claudins: this family of protein is the most important component of narrow junctions, where they establish the la barrier that controls the flow of molecules in the intercellular space between the cells of an epithelium.Blood-brain barrier: A structure in the CNS that keeps substances present in the bloodstream out of the brain, allowing in substances essential for metabolic function such as oxygen. occludin: A protein that forms the main component of tight junctions, together with the claudin group of proteins. Examples An exception to bacterial exclusion are diseases caused by spirochaetes, such as Borrelia, which causes Lyme disease, and Treponema pallidum, which causes syphilis. These harmful bacteria appear to breach the BBB through the physical tunnel through the walls of the blood vessels. Modalities for the administration of drugs via BBB involve its interruption by osmotic means, biochemically by the use of vasoactive substances, or by localized exposure to high-intensity concentrated ultrasound. The blood-brain barrier (BBB) is a separation of circulating blood from the brain’s extracellular fluid in the central nervous system (CNS). Bacteriologist Paul Ehrlich observed that the chemical dye injected into an animal would stain all its organs except the brain. In a later experiment, his student Edwin Goldmann discovered that when the dye is injected directly into the cerebrospinal fluid (CSF) of the animal’s brain, the brain is stained while the rest of the organs are not affected. This clearly shows that there is a sort of compartmentalization between the brain and the rest of the body. The concept of BBB (then called the blood-brain barrier) was proposed by Lewandowsky in 1900. It was not until the introduction of the scanning electron microscope that the actual membrane could be observed and demonstrated to exist. Structure of the blood-brain barrier The small-scale blood-brain barrier: Astronomers send projections to completely surround the capillaries. This allows a tight regulation of the passage of molecules inside and outside the CNS. BBB results from the selectivity of the tight joints between the endothelial cells in the CNS vessels that limit the passage of solutes. At the interface between blood and brain, endothelial cells are joined by these narrow crossings, which are composed of smaller subunits, frequently biochemical dimers that are transmembrane proteins such as occludin, claudins, and junctional adhesion molecule. Each of these transmembrane proteins is anchored in the endothelial cells by another protein complex. This barrier also includes a thick underground membrane and projections of astrocyte cells called astrocyte feet (forming the thin barrier called the glia boundaries) that surround the BBB endothelial cells, providing biochemical support to those cells. Function and Importance of the Blood-Brain Barrier Cells BBB limit the passage of substances from the bloodstream to a greater extent than endothelial cells in capillaries elsewhere in the body. The diffusion of microscopic particles (e.g. bacteria), large molecules and andThe diffusion of small hydrophobic molecules (O2, CO2, hormones) is limited. Furthermore, BBB cells actively carry metabolic products like glucose through the barrier. Unprotected brain areas Many areas of the human brain are not protected by the BBB. These include the circumventricular organs such as the Postra area, median eminence of the hypothalamus, pineal gland and the back ipofisi. The back ipophysis and the pineal gland are not covered by the BBB because they secrete hormones in circulation. The median eminence is not covered by the BBB since the pituitary secretions are collected in this area before placing in circulation. The Postra area detects harmful substances present in the blood and therefore does not fall within the field of application of the BBB. Role of the ematoencephalic barrier in infectious processes The BBB effectively protects brain from many common bacterial infections, so brain infections are very rare. However, since antibodies and antibiotics are too large to cross the BBB, brain infections that occur are often very serious and difficult to treat. However, the BBB becomes more permeable during inflammation. This allows some antibiotics and phagocytes to move through the BBB, but also allows bacteria and viruses to cross. Diseases caused by spirochetes are exceptions to this bacterial exclusion. These include Borrelia (the cause of Lyme's disease), and treponema pallidum, which causes syphilis. These harmful bacteria seem to break the BBB physically digging through the walls of blood vessels. Some toxins are composed of large molecules that cannot pass through the BBB. Neurotoxins like botulinum toxin in foods can hit peripheral nerves, but the BBB can often prevent such toxins from reaching the snc, where they could cause serious or fatal damage. Cerebrospinal fluid and its circulation The cerebrospinal fluid is a transparent liquid that acts as a cushion for the brain and maintains the global homeostasis of the central nervous system. Describe the role and circulation of the cerebrospinal liquid in the nervous system key points the cerebrospinal liquid (CSF) is a clear and colorless body liquid that occupies the Subaracnoid space and the ventricular system around and inside the brain and spinal cord. The CSF acts as a cushion or buffer for bark, providing basic mechanical and immunological protection to the brain within the skull and serving a vital function in cerebral self-regulation of brain blood flow. The CSF has five primary purposes: floating, protection, chemical stability, waste removal and prevention of cerebral ischemia. CSF can be tested for the diagnosis of a variety of neurological diseases through the use of a procedure called lumbar puncture. The CSF is produced in the choroid plexus in the From modified emendal cells. Key Terms System Gliinfatico: functional path to eliminate waste for the central nervous system of vertebrates (SNC) consisting of a path of influx para-arterial para-arterial CSF to enter the brain coupled to a liquidation mechanism for the removal of interstitial liquids and extracellular extracuels from the interstitial compartments of the brain and spinal cord. Choide Plesso: a structure in the brain ventures where the CSF is produced. Lumbar puncture: a diagnostic and sometimes therapeutic procedure performed to collect a CSF9 for biochemical, microbiological and cytological analysis, or rarely to alleviate greater intracranial pressure. A 2010 study showed that QCS analysis for three protein biomarkers can indicate the presence of Alzheimer's disease. The three biomarkers are csf â €