Blood Brain Barrier Inhibitor

Courtney Dulude
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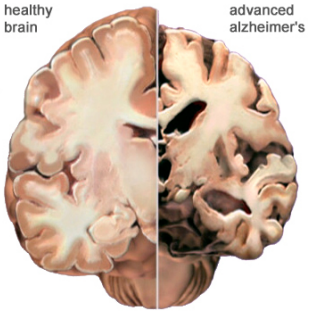
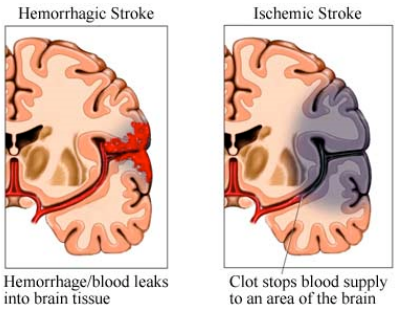
How do Alzheimer's Disease and Strokes Affect the Brain?

Feelings, memories, and thoughts are lost due to Alzheimer's because they travel through neurons which are the most common cell type destroyed by the disease, and because the way in which electrical charges travel through the brain are altered. There are also a great amount of abnormal groups of protein fragments which build up between the nerve cells. Because of the great amount of brain tissue lost to the disease there are is a noticeable amount of shrinkage which occurs in the brain.



A stroke can be defined as some type of disruption in the flow of blood in the brain. There are generally two types of strokes – Hemorrhagic and Ischemic. A Hemorrhagic Stroke results in a burst blood vessel which leaks blood into the tissue of the brain. An Ischemic Stroke is when a blood clot cuts of the blood supply to a certain part of the brain. Both of these could cause permanent damage in the form of loss of movement in various parts of the body, and in some cases even death. Surprisingly, stroke is the leading cause of adult disability in both the United States and in Europe.

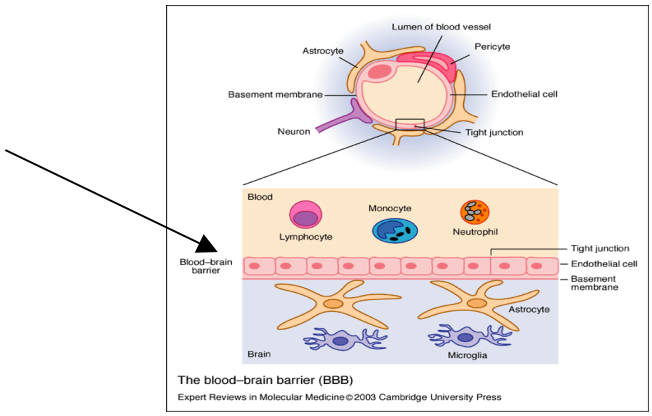


What is the Blood Brain Barrier?

The Blood Brain Barrier (BBB) is a high-density, cellular structure in the CNS which controls the chemicals and particles from the bloodstream are allowed to enter the brain. Any foreign object that the BBB does not recognized is immediately turned away. It only allows the few chemicals which aid in brain/body functions to pass through.

Hormone to Treat Alzheimer's and Stroke Victims

Researchers from St. Louis University have discovered a new treatment that is present in the human body. The hormone PACAP27 (pituitary adenylate cyclase-activating polypeptide)



is produced naturally by the body, as well as artificially in labs. This hormone is a neuro-protectant which means that it helps protect or repair the nervous system of the brain after a stroke or other damage has occurred. In the past this hormone has not been used because it is not able to access the damaged parts of the brain due to blockage by the BBB. Very recently scientists have isolated the specific part of the BBB which inhibits the PACAP27 hormone from passing into the brain. These scientists have created an antisense which essentially "turns off" that particular function of the BBB. Antisense therapy is when strands of nucleic acids are synthesized and bound to RNA of a certain gene to make that gene inactive.

The Future

Unfortunately, this method has not yet been used on humans, but the mice that received this treatment yielded unbelievable results. The mice which were affected with Alzheimer's disease because much smarted after receiving the antisense treatment, and those which had suffered a stroke had reduced damage to the brain and improved brain recovery. To treat the mice with Alzheimer's disease, scientists administered extra doses of the PACAP27 hormone, but mice who had suffered a stroke were able to recover with just the amount of hormone that their body produced naturally. This new method seems to be very promising and will hopefully yield similar results in humans!

"Blood-brain barrier." Wikipedia, The Free Encyclopedia. 13 Nov 2008, 17:45 UTC. 14 Nov 2008 <http://en.wikipedia.org/w/index.php?title=Blood-brain_barrier&oldid=251591279>.

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