

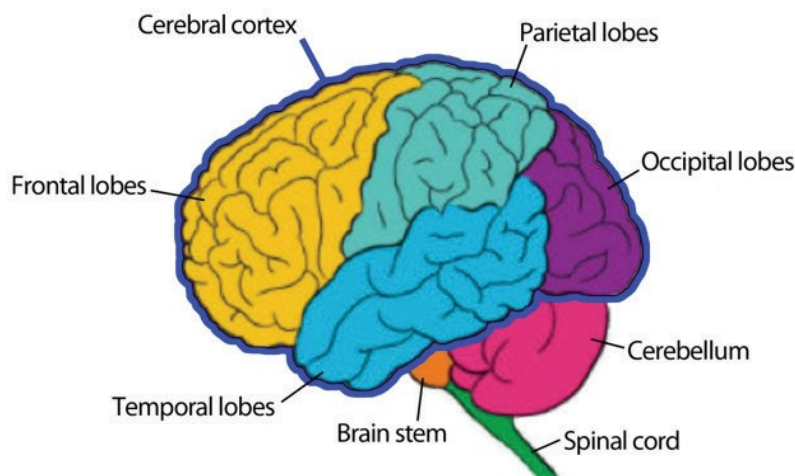
Structure and Function of the Brain

An acquired brain injury (ABI) is an injury to the brain that happens after birth. Both meningitis and meningococcal septicaemia can cause acquired brain injury.

Meningitis: The increase in pressure caused by the inflammation of the meninges can damage the brain and spinal cord.

Septicaemia: The reduced supply of oxygen and other nutrients to the brain can cause permanent damage.

The brain is divided into different areas (lobes) and each lobe is responsible for different activities or functions. Meningitis or septicaemia can result in damage to one or more areas of the brain, and the after-effects experienced will vary depending on the area affected.



Cerebrum or cerebral cortex

This is the largest part of the brain and is divided into the right and left hemispheres. The left hemisphere controls the right side of the body and is usually responsible for speech and language functions. The right hemisphere controls the left side of the body and is usually responsible for processing visual and spatial information, and other non-verbal skills.

The two hemispheres are linked by bundles of nerve fibres which allow communication between each side of the brain. Each hemisphere of the cerebrum is divided into the following lobes, which each have different functions:

Frontal lobes

These lobes are responsible for:

- Executive function – decisions, planning ahead, attention, behaviour, emotion.
- Speech and language.
- Memory.
- Planned movement.

Frontal lobes are particularly prone to injury, usually impact or trauma, but can also be damaged by infection such as meningitis or septicaemia. This area of the brain is connected to many other areas, so damage here can have a significant impact on many other functions or activities.

Parietal lobes

These are the processing centres of the brain and responsible for:

- Perception, making sense of things.
- Sensation – touch, pain, hot or cold.

Occipital lobes

These process visual information and control the ability to recognise shape, colour, objects and faces.

Temporal lobes

These are responsible for processing sound and understanding speech. They also form part of the system that controls memory. The left lobe processes receptive language and the right lobe processes musical awareness.

Cerebellum

This area of the brain is responsible for:

- Balance
- Movement
- Co-ordination
- Spatial awareness

Brain stem

This area is responsible for the involuntary functions that keep us alive:

- Heart rate
- Breathing
- Blood pressure
- Reflexes e.g. swallowing
- Level of consciousness
- Hormone regulation

This short description of the functions of the different areas of the brain helps to explain the wide range and combination of after-effects that can happen as the result of ABI caused by meningitis or septicaemia.

Sources of information

Waugh A & Grant A, 2006, Ross and Wilson, Anatomy and Physiology in Health and Illness, Churchill Livingstone, ISBN 9780443101014
www.braininjuryhub.co.uk/information-library

Resources

Information provided by Meningitis Now and Meningitis Research Foundation April 2017

More information can be found at meningitisnow.org and meningitis.org

