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Non-traumatic brain injury

There is much more I more I can tell you about non-traumatic brain injury. There's quite a lot of information so please just read what you would like to know.

This section will tell you about:

- **What is a non-traumatic brain injury?**
- **What causes a non-traumatic brain injury?**
- **Brain infections: what happens and what to look out for**
- **Brain tumours: what are they and how do I know if I have one?**
- **Other causes of non-traumatic brain injury**
- **Damage to the brain.**

What is a non-traumatic brain injury?

A non-traumatic brain injury is when the brain has been damaged by an illness. There are no cuts or broken bones but a non-traumatic brain injury is still very serious.

What causes a non-traumatic brain injury?

There are many reasons why someone might develop a non- traumatic head injury although the main reasons are:

- Infection
- Brain tumour.

There are other reasons too although they are very medical! A brief description of each one is here:

- Vascular abnormalities (blood supply problems)
- Hypoxic injury when the brain doesn't get enough oxygen
- Brain injury through some other part of the body going wrong such as the kidneys or liver. This is sometimes due to an electrolyte imbalance or a metabolic disorder
- Medical accident.





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Brain Infections: what happens and what to look out for

Infection is when the brain gets infected with a nasty bug. There are lots of different types of infection but the most common you hear about are:

- Meningitis
- Encephalitis.

Although they are different in some ways, they are similar in others.

Meningitis

Meningitis is a very frightening illness. It can develop really quickly and is very hard to tell from other illnesses.

Meningitis is an inflammation of the outside of the brain called the meninges. Any word with 'itis' on the end means an inflammation of that part of the body. Tonsillitis is an inflammation of the tonsils, for example, Appendicitis is an inflammation of the appendix.

There are many different bugs that cause meningitis and so it can get very confusing! Bugs that cause illnesses all have their own name but they can be split into groups:

- Bacteria
- Viruses
- Fungus.

Meningitis will then be named after the type of bug that has caused the meningitis in the first place. You will hear doctors and nurses refer to:

- Bacterial meningitis
- Viral meningitis
- Fungal meningitis.

Meningitis causes the brain to swell. There isn't a lot of spare room in the skull and so the brain gets a bit squashed. The small blood vessels get congested with the white blood cells that are trying to fight the infection. The brain becomes injured from all the fighting. Oxygen can't get to parts of the brain it needs to and little blood vessels can burst causing more damage.

Sometimes the Cerebro Spinal Fluid (CSF) can't flow properly which causes further injury. Try and imagine a damaged landscape on a battlefield and you will get the idea.





If you have meningitis the doctors will do tests to see which type of meningitis you have so that they can start to treat the problem. Viral and fungal meningitis are not usually as serious and can be treated with medicine. There may be a need to go to intensive care initially but people usually make a full recovery in two weeks.

Bacterial meningitis is much more serious. People who have bacterial meningitis can spend a long time in intensive care because their brain has become very injured from all of the fighting inside. In some cases the person is so sick they can't even breathe for themselves and so they have to go on a 'ventilator' or a breathing machine sometimes called a 'life support machine' for a period of time.

Encephalitis

Encephalitis is inflammation of the brain. Encephalitis is different from meningitis. Meningitis means inflammation of the protective layers that cover the brain. In Encephalitis the inflammation is caused either by an infection invading the brain (infectious), or through the immune system attacking the brain in error (post-infectious / autoimmune encephalitis).

Sometimes patients have both meningitis and encephalitis and this is called meningoencephalitis.

Encephalitis frequently begins with a 'flu-like illness or headache'. Typically, more serious symptoms follow hours to days later. The most serious finding is an alteration in level of consciousness. This can range from mild confusion or drowsiness, to loss of consciousness and coma.

What to look out for

Brain infection is a big worry because the person who has been infected can fall very ill very quickly. If it is caught in time there is a good chance that the person will survive.

Here is what to look out for in both meningitis and encephalitis:

- Fever
- Headache
- Irritability
- Lethargy (feeling tired)
- Nausea and vomiting (feeling sick and being sick)
- Blurred vision
- Not hearing properly





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- Slurring speech
- Aversion (dislike) of bright lights
- Seizures (can be very frightening)
- Neck stiffness
- A dark purple rash. With meningitis, you may see a dark purple rash that will not go away when you press it or roll a glass over it. The person is very sick and you must get them to hospital in an ambulance right away!

Brain tumours: what are they and how do I know if I have one?

Brain tumours are very complicated and there are many different types. Around 350 children and young people are diagnosed with brain tumours each year.

A brain tumour happens when normal cells go wrong and grow in a different way to other brain cells. These abnormal cells divide and multiply to make more and more of themselves and form a lump. This lump is called a tumour. It can make you feel sick and give you some nasty side effects.

It is very hard to know if you have a brain tumour and depending on where the brain tumour is it will give you different problems.

What to look for

Symptoms of a brain tumour include:

- Bad headaches
- Feeling sick all the time, especially in the mornings
- Blurred visions
- Wobbly legs
- Sleep disturbance.

There are a few more symptoms but they are very complicated and you would need to be a doctor or nurse to understand the other symptoms. If you are worried, go and see your doctor. If he/she thinks you need to have a brain scan (also known as a CAT scan or an MRI scan), they will organise for you to have one at your local hospital.

You can find out more information on brain tumours at:
www.headstrongkids.org.uk





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Other causes of non-traumatic brain injury

These are all rather rare but they do affect a few people.

Vascular abnormalities: Some people have problems with the blood vessels that carry the blood to the brain. Some of the blood vessels are very weak or narrow called an aneurysm. If these blood vessels burst, blood can leak into different parts of the brain which is called a 'cerebral haematoma'. This can make the person very sick and they usually go to intensive care and have surgery. There are lots of types of vascular abnormalities. Ask your doctor or nurses for more information as it is very complicated.

Hypoxic injury: Hypoxia means 'poor oxygenation'. In this case it means that the brain has not received enough oxygen and that parts of the brain have died. The brain uses a lot of oxygen and so if it can't get enough it starts to die. Hypoxic injury is well known by your doctors and nurses and it is one of the first things they are taught about at medical and nursing school! It is part of their job to make sure the brain gets enough oxygen so try not to worry about it. Hypoxic injury can occur when someone stops breathing for whatever reason.

Metabolic imbalance: Sometimes other parts of the body go wrong that has an effect on the brain; for example, sometimes your kidneys don't get rid of salt which makes the brain swell. These are very complicated and again it really isn't anything for you to worry about.

Medical accident: Unfortunately, accidents happen in hospital too. Sometimes a doctor or a nurse might give someone a drug overdose by accident. It is possible to cause brain damage in this way although this doesn't happen very often and doctors and nurses are trained in preventing accidents. No good doctor or nurse would ever hurt anyone intentionally.

