Anoxic brain injury and neurological braindeath : Information for patients and families

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Definition

Anoxic brain injury occurs when the brain does not receive enough oxygen to stay alive. Most commonly, this scenario happens after the heart stops pumping (a “cardiac arrest”).

What causes the heart to stop beating?

An abnormal rhythm (electrical abnormality) of the heart can stop it from beating

Depending on the type of electrical abnormality, the problem might be inside the heart or another problem in the body causing the heart to stop

An investigation will be conducted to find the underlying problem, if possible

What happens to the brain after a cardiac arrest?

The brain is the most important organ in the body

Unfortunately, the brain does not have a storage of energy

If it stops receiving blood flow and oxygen from the heart / lungs, it will start to become irreversibly damaged after only
4 minutes without blood supply

If blood flow (delivery of oxygen) is not restored, the brain will start to die and it can become very swollen

How do we know the brain is damaged?

We use multiple methods of assessment to determine the severity of brain injury after a cardiac arrest:

- Clinical examination
- History – initial abnormal rhythm, duration without blood supply, if the patient received immediate CPR etc.
- CT scans
- Tests measuring the electrical activity of the brain

How do we treat patients with brain damage after a cardiac arrest?

If blood is restored to the brain (heart re-started) then our focus is optimize the delivery of oxygen to the brain

This is achieved by:

- Maintain blood pressure with medications to allow the heart to pump blood to the brain
- We control the temperature of the body – this is done to prevent a fever which make the brain use more oxygen and potentially cause more injury
- We used sedation medications to “rest” the brain and allow time for healing. This is usually for 24-48 hours.

Prognosis?

The prognosis of most patients is poor (~50-70%).

Predictors of poor outcome include:

- Older age
- Multiple previous diseases (heart disease, diabetes, kidney disease, lung disease etc)
- Long duration of cardiac arrest
- Unwitnessed cardiac arrest
- Poor clinical examination (we will help with this)