

Hypoxia

Hypoxia is a condition where tissues fail to receive an adequate supply of oxygen. For the normal functioning of the brain, it requires a constant supply of oxygen. If there is any obstruction in this supply of oxygen to the brain, then it leads to hypoxia.

What are the different causes of Hypoxia?

1. When there is no blood supply to the brain.
2. When there is a low blood supply to the brain, this happens when a single blood vessel is blocked or partially obstructed.
3. When the body can't take in oxygen, or the heart or lungs can't provide the blood with oxygen.
4. When the body can't properly oxygenate the blood.

Types of Hypoxia

1. Hypoxic Hypoxia
2. Anaemic Hypoxia
3. Stagnant Hypoxia
4. Histotoxic Hypoxia
5. Fulminating Hypoxia

Hypoxic Hypoxia

Arterial blood faces a situation of oxygen scarcity. Haemoglobin is not saturated with Oxygen to its normal levels. This kind of hypoxia affects the whole body and is a very serious form of hypoxia.

Causes behind Hypoxic Hypoxia

1. Inhaling anaesthetic agents.
2. High altitudes
3. Breathing inert gases
4. Abnormal lung conditions
5. Asthma, Pneumonia
6. Mechanical obstruction of the airway by foreign objects
7. Bronchospasm

Anaemic Hypoxia

In this type of hypoxia, the oxygen levels in arterial blood are at normal levels but there is a shortage of functioning haemoglobin. It affects the whole body.

Causes of Anemic Hypoxia

1. Acute or chronic haemorrhage
2. Primary or secondary anaemia
3. Alterations in the haemoglobin of the blood.
4. Carbon monoxide poisoning

Stagnant Hypoxia

It is due to the decrease in the rate of flow of circulating blood. It may affect the entire body. In this case, the blood is saturated normally with oxygen. This kind of hypoxia occurs because the amount of oxygen reaching the tissues is inadequate. Sluggishness in the rate of the circulating blood allows the blood to stagnate and give up a greater percentage of its oxygen. Due to this slow circulation, there is a greater accumulation of carbon dioxide in the tissues.

Causes of Stagnant Hypoxia - Cyanides

Histotoxic Hypoxia

The tissue cells are poisoned and are unable to accept oxygen. In this type of hypoxia, the amount of oxygen is normal but the cells are not able to use the oxygen.

Fulminating Hypoxia

It is a newly recognized form of Hypoxia.

Causes of Fulminating Hypoxia

1. Caused by inhalation of undiluted inert gases such as nitrogen, methane, or helium.

Different Illness and Injuries which can cause Hypoxia

1. Travelling to high altitudes.
2. Poisoning due to carbon monoxide.
3. Strangulation
4. Very low blood pressure
5. Smoke inhalation
6. Choking
7. Heart attack or stroke
8. Severe cases of asthma
9. Hyperventilation

Symptoms of oxygen deprivation are:

1. Confusion
2. Changes in mood
3. Tingling sensation
4. Blue or white lips, tongue or face.
5. Inability to breathe
6. Unable to speak

How is hypoxia diagnosed?

In general, it is usually diagnosed by oxygen monitors placed on fingers or ears (pulse oximeter) or by determining the oxygen level in a blood gas sample. The sample of blood is taken from the artery. If the oxygen saturation levels are between 94% to 99%, then it can be considered as normal reading. Oxygen must be supplied if the level is about 92% or below.

2019 Nobel Prize in Medicine

The award was given to 3 scientists who carried out studies on how cell sense and to adapt to reduced oxygen levels.

The 2019 Nobel Prize in Medicine was awarded to Sir Peter J Ratcliffe (British Scientist) and William G Kaelin Jr and Gregg L Semenza (American Scientists).