

Difference Between Ischemic and Hemorrhagic Stroke

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Key Difference - Ischemic vs Hemorrhagic Stroke

A [stroke](#) is a derangement of [brain](#) functions as a result of an interruption to the [blood](#) supply of the brain. In ischemic strokes, this interruption is due to a blockage in a vessel whereas in hemorrhagic strokes there is damage to a vessel in the cerebral circulation which causes the leakage of blood into the extracellular space while depriving the neural tissues of vital factors such as oxygen. Thus, in **ischemic strokes, the cerebral vessels are intact unlike in hemorrhagic strokes where one or more cerebral vessels are damaged.** This is the **key difference** between the two varieties of strokes.

What is an Ischemic Stroke?

An ischemic stroke is the impairment of the blood supply to brain secondary to an obstruction in a cerebral vessel. A vast majority of the strokes are ischemic strokes.

Causes

- [Thrombosis and embolism](#)

[Atrial fibrillation](#) and [arrhythmias](#) leading to the formation of thrombi and their subsequent embolization is the commonest cause of strokes. Simultaneous infarcts in different vascular territories are a clear indication of a cardiac embolic stroke.

- Hypoperfusion
- Large artery stenosis
- Small vessel disease

Clinical Features

- There are loss motor control and sensation over different regions of the body depending on the area of the brain that is affected.
- Visual changes and deficits
- [Dysarthria](#)
- Loss of consciousness
- Facial Droop

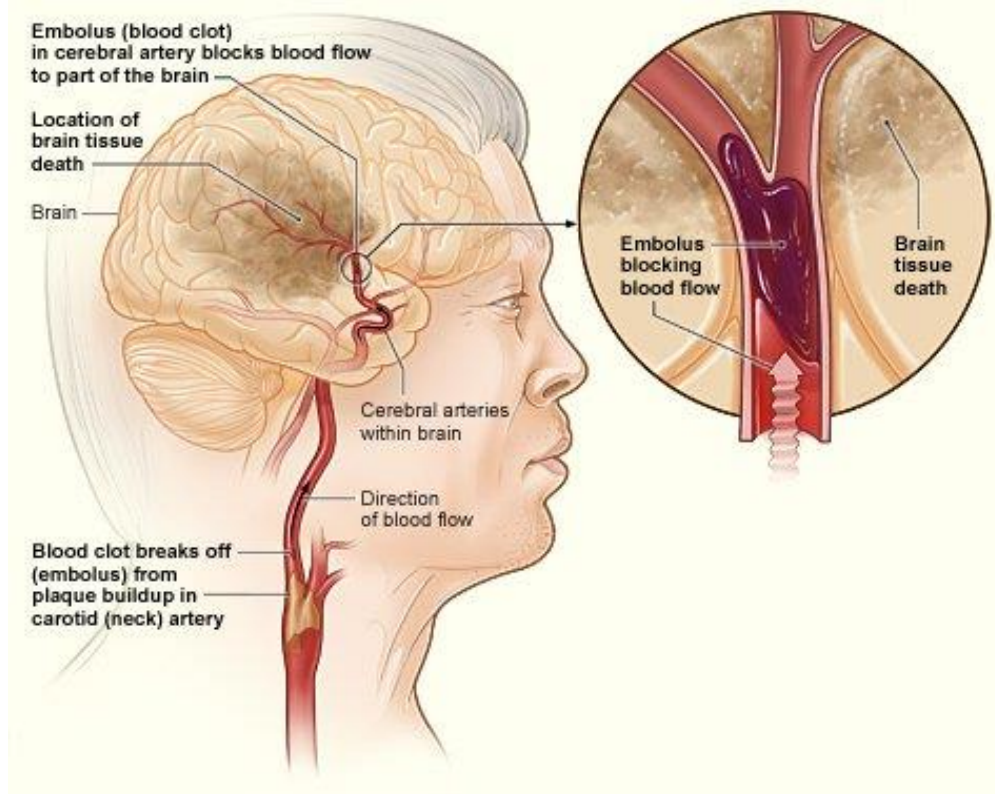


Fig 01: Ischemic Stroke

Management

The gold standard treatment for the management of ischemic strokes is the administration of tPA. In addition to that mechanical thrombectomy is also performed occasionally to remove any [clots](#) that have lodged in the affected cerebral vessels.

What is a Hemorrhagic Stroke?

In a hemorrhagic stroke, the impairment of blood supply to the brain is due to damage to a vessel or vessels. Blood vessels with [aneurysms](#) and weak walls are more susceptible to get ruptured and give rise to [hemorrhages](#) inside the cranial cavity.

Causes

- Intracerebral hemorrhages
- Subarachnoid hemorrhages

These hemorrhages can be due to trauma, rupturing of aneurysms, arteriovenous malformations and etc.

Clinical Features

- In case of subarachnoid hemorrhages, there can be a sudden onset of a severe headache along with nausea, vomiting, syncope, and photophobia
- Clinical features observed in ischemic strokes can be seen in hemorrhagic strokes also.

Management

Surgical interventions are often required in the management of hemorrhagic strokes. The buildup of intracranial pressure has to be immediately stopped to prevent the herniation of brain tissues and irreversible damages to neural tissues.

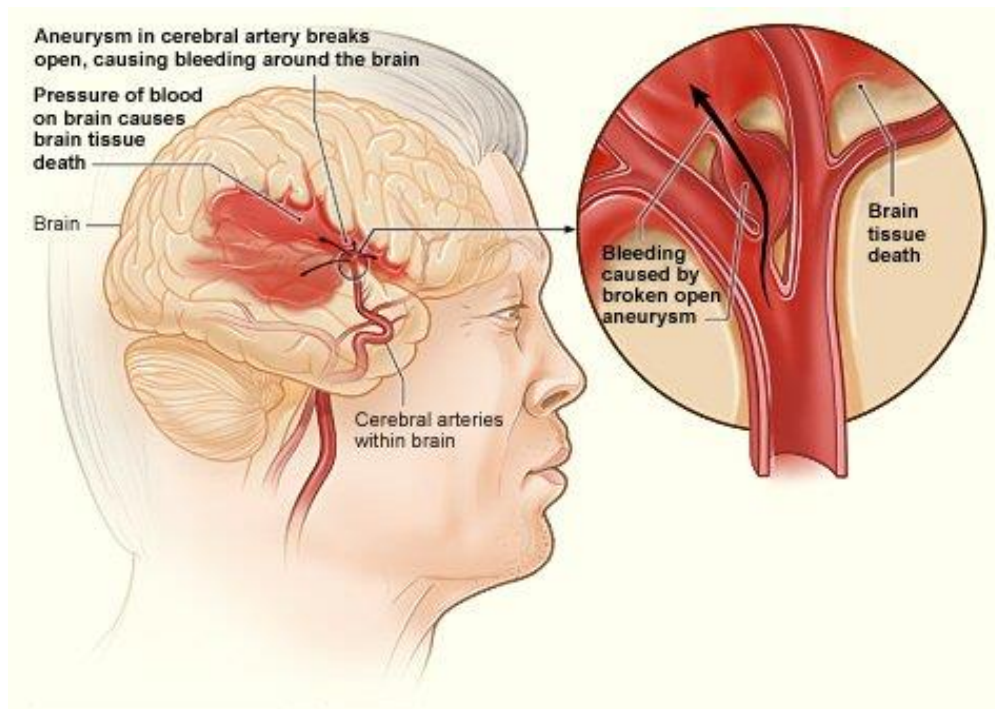


Fig 02: Hemorrhagic Stroke

Investigations

The following investigations are carried out for the diagnosis of strokes

- [MRI](#)
- [CT](#)
- Cerebral angiogram
- Echocardiogram
- Carotid ultrasound

What are the Similarities Between Ischemic and Hemorrhagic Stroke?

- Blood supply to the brain is compromised in both these types of strokes
- Investigations performed for the diagnosis of strokes include MRI, CT, cerebral angiogram, echocardiogram and carotid ultrasound.
- The following set of clinical symptoms and signs are observed in both forms of strokes
- There are loss motor control and sensation over different regions of the body depending on the area of the brain that is affected.
- Visual changes and deficits
- Dysarthria
- Loss of consciousness
- Facial Droop

What is the Difference Between Ischemic and Hemorrhagic Stroke?

Ischemic Stroke vs Hemorrhagic Stroke	
An ischemic stroke is the impairment of the blood supply to brain secondary to an obstruction in a cerebral vessel.	In a hemorrhagic stroke, the impairment of blood supply to the brain is due to damage to a vessel or vessels.
Damage to Blood Vessels	
There is no damage to the blood vessels	Blood vessels are damaged
Causes	
Ischemic strokes are caused by, <ul style="list-style-type: none"> • Thrombosis and embolism (commonest cause) • Hypoperfusion • Large artery stenosis • Small vessel disease 	Rupture of aneurysms, arteriovenous malformations, and trauma are the main causes of hemorrhagic strokes.

Summary - Ischemic vs Hemorrhagic Stroke

When the cerebral blood supply is compromised, that is known as a stroke. An ischemic stroke is the impairment of blood supply to brain secondary to an obstruction in a cerebral vessel whereas a hemorrhagic stroke is the impairment of cerebral perfusion due to rupturing of a

vessel. Therefore the blood vessels are damaged only in the hemorrhagic strokes and not in the ischemic strokes. This is the difference between these two conditions.

Reference:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009.

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2.'Stroke hemorrhagic'By National Heart Lung and Blood Insitute (NIH), (Public Domain)
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How to Cite this Article?

APA: Difference Between Ischemic and Hemorrhagic Stroke.(2017 December 05). Retrieved (date), from <http://differencebetween.com/difference-between-ischemic-and-vs-hemorrhagic-stroke/>

MLA: "Difference Between Ischemic and Hemorrhagic Stroke" Difference Between.Com. 05 December 2017. Web.

Chicago: "Difference Between Ischemic and Hemorrhagic Stroke". Difference Between.Com. <http://differencebetween.com/difference-between-ischemic-and-vs-hemorrhagic-stroke/>accessed (accessed [date]).



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