

# STROKE

↳ A condition of blockade of flow of blood to the brain → Stroke / Cerebrovascular Accident.

↳ It occurs either due to Occlusion or Rupturing of blood vessels

Types:

I. ISCHEMIC STROKE → Narrowed or blocked arteries of brain reduce blood flow, causing ischemia

Thrombotic  
Stroke

Embolic  
Stroke

• Thrombotic Stroke → Formation of a thrombus or clot in an artery supplying blood to brain → results in the stroke.

• Embolic Stroke → Blood clot formed in body-parts away from the brain (like heart) is carried by the blood to narrow arteries

of brain → Block occur.

## II. HAEMORRHAGIC STROKE:

↳ Rupturing/leakage of a blood vessel of the brain due to hypertension etc. will result in this type of stroke.

Intracerebral  
Haemorrhage

Sub-Arachnoid  
Haemorrhage

### • Intracerebral Haemorrhage

↳ Rupturing of a brain blood vessel spills blood in the surrounding brain tissue, thus damaging the brain cells.

### • Sub-Arachnoid Haemorrhage.

↳ Rupturing of an artery of the brain spills blood in the space between the brain surface and skull.

↳ Sudden and severe headache is the initial sign of this type of stroke.

## ETIOLOGY

- ↳ Hypertension
- ↳ Diabetes Mellitus
- ↳ Hyperlipidemia
- ↳ Smoking
- ↳ Inactivity
- ↳ Obesity
- ↳ Alcoholism
- ↳ Sleep apnea
- ↳ Estrogen use
- ↳ Atrial fibrillation
- ↳ Carotid Artery Stenosis/Narrowing.

Factors  
that  
can be  
Modified

- ↳ Increased Age
- ↳ Male gender
- ↳ Family History
- ↳ Race
- ↳ Family History of Stroke or Heart attack before age 60.

Factors  
that cannot  
be modified

## SIGNS & SYMPTOMS

### Major Stroke Syndromes

- ↳ Sudden Confusion
- ↳ Speech difficulty {difficulty in speaking and understanding speech}
- ↳ Sudden loss of vision from one eye
- ↳ Sudden difficulty in walking, dizziness and or balance or coordination loss
- ↳ Sudden numbness or weakness in an arm or leg {only on one side of the body}
- ↳ Sudden severe headache.

### Subtle Syndromes of Stroke

- ↳ Acute difficulty to know the distance or depth
- ↳ Acute difficulty to recognize one side of body
- ↳ Acute difficulty to learn new things
- ↳ Acute difficulty making plans leading to impulsiveness or poor planning

- ↳ Acute Onset of making poor judgement
- ↳ Acute Start for lack of safety awareness

### COMPLICATIONS:-

- ↳ Paralysis or Loss of Muscle Movement
  - ↳ Paralysis on one side of the body and loss of control over muscles of one side of face or one arm occurs
- ↳ Difficulty in Talking / Swallowing
- ↳ Memory loss or Thinking difficulties
  - ↳ Memory loss may also occur along with difficulty in thinking, making judgements, reasoning and understanding concepts.
- ↳ Emotional Problems
  - ↳ Less control over emotions and development of depression are other complications.

- ↳ Pain { Pain, Numbness / other strange sensations }
- ↳ Changes in Behaviour or Self-care ability

## DIAGNOSIS

- ↳ Blood Test → predict clotting time, Blood Sugar level, Presence of chemicals in blood and an infection.
- ↳ Computerized Tomography (CT) Scan
  - ↳ A Series of X-rays provide complete image of the brain, presenting a bleeding, tumor, stroke and other conditions.
- ↳ Magnetic Resonance Imaging (MRI)
- ↳ Carotid ultrasound
- ↳ Cerebral Angiogram
- ↳ Echocardiogram

## TREATMENT:

### I. ISCHEMIC STROKE :-

(a) Emergency Treatment with Medications.

- Aspirin
- tPA (Tissue Plasminogen Activator)

## (b) Emergency Procedures

- Medications Delivered directly to the Brain.
- Mechanical clot Removal.

## (c) Other Procedures

- Carotid Endarterectomy
- Angioplasty and stents.

## II. Haemorrhagic Strokes.

- Emergency Measures { Warfarin, clopidogrel }

- Surgical Blood Vessel Repair

{ Surgical clipping  
Coiling

Surgical AVM removal

Intracranial Bypass

Stereotactic Radio Surgery }

Strokes   
 / Ischemic   
 \ Haemorrhagic

Elderly people mostly suffer from ischemic stroke which results in blockage of cerebral artery by a clot/thrombus.

Ischemic Stroke   
 / Large artery Atherosclerosis   
 \ Small Artery Occlusion   
 / Cardio-embolism

Large Artery Atherosclerosis → Severe narrowing of arteries / rupturing of plaque in the carotid, vertebral, basilar, middle cerebral arteries.

↓   
 Vascular <sup>hypertension</sup> atrophy and thrombosis causes narrowing of arteries which further causes small artery vascular occlusion of cerebral arteries.

↓   
 Cardiac clot formed in heart and it occludes a cerebral artery → Cardio-embolic Strokes.



\* Rupture of a stiff cerebral artery due to conditions like atherosclerosis, hypertensive lipohyalinosis promotes haemorrhagic stroke



Cerebral haemorrhage (bleeding) can also be promoted by any bleeding disorder, brain tumour, disorders of arteries or trauma/injury.