CEREBROVASCULAR ACCIDENTS

د. احمد حسن راضي

Stroke

- A stroke or **Cerebrovascular Accident (CVA)** is a serious life-threatening medical condition that occurs when the blood supply to a part of the brain is cut off.
- Strokes are divided into two groups depending upon the cause.
- There can either be a blockage called an ischaemic stroke or
- a bleed called a haemorrhagic stroke.
- It is important to identify the type of stroke since treatment varies according to the type.

Definition

- **Transient Ischemic Attack (TIA) and stroke** are caused by pathophysiologic processes involving loss of blood flow to the brain potentially causing transient or permanent neurologic dysfunction.

- CVA (Stroke) is the third leading cause of death and a leading cause of morbidity and long-term disability.
-
- The majority of strokes are classified as ischemic stroke (incidence of 68% to 85%);
- hemorrhagic stroke has an incidence of 15% to 32%.

Ischemic Stroke

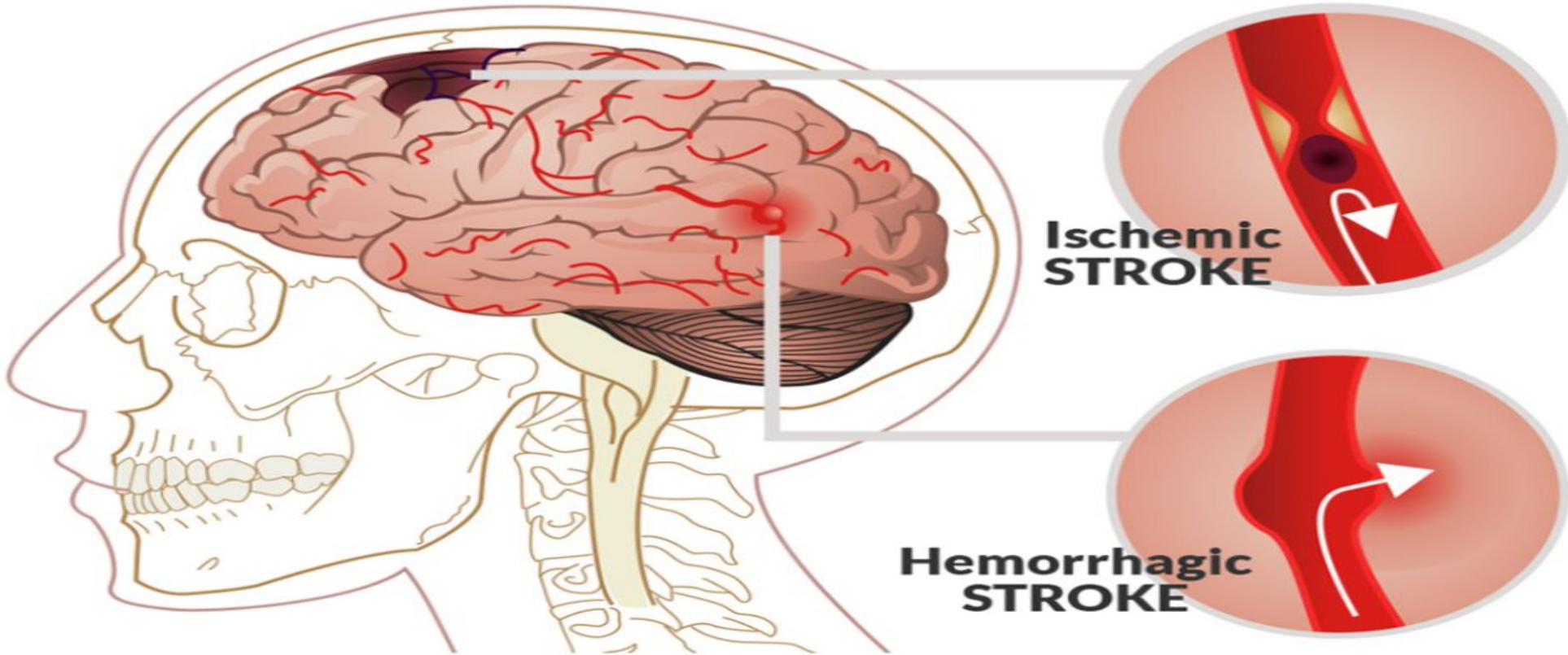
- **Transient Ischemic Attacks TIAs**
- A brief episode (often less than one hour, but may last up to 24 hours) of neurological dysfunction caused by focal brain, spinal cord or retinal ischemia, with clinical symptoms and without imaging evidence of acute infarction.
- TIAs and minor strokes are the mildest form of ischemic stroke and cannot be differentiated by symptom duration alone.
- There is a risk of permanent tissue injury even when the neurological symptoms last less than one hour, and there is an increased risk of recurrent stroke after TIA.
- TIAs can be a warning sign that a large stroke is imminent and in some cases, urgent workup is required.

Embolic or thrombotic stroke

- An episode of symptomatic neurological dysfunction caused by focal brain, retinal or spinal cord ischemia with evidence of acute infarction on imaging (MR, CT, retinal photomicrographs), regardless of symptomatic duration.
- This type of stroke involves fragments that break from a thrombus formed outside the brain or in the heart, aorta, or common carotid artery (embolic), or from within the brain (thrombotic).
- Sources of emboli include fat, air, bacterial clumps, and foreign bodies.

Sources of emboli

- Cardiac mural thrombi (frequent) (Myocardial infarct, valvular disease, atrial fibrillation)
- Arteries (Atheromatous plaques within the carotid arteries).
- Paradoxical emboli (it is a Passage of a clot (thrombus) from a vein to an artery)
- Emboli associated with cardiac surgery.
- Emboli of other material (tumor, fat, or air).



STROKE

Causes

- TIA and Ischemic Stroke TIAs and ischemic stroke have the same causes and risk factors.
- Both are considered emergencies and require urgent evaluation.
- TIAs and ischemic stroke are caused by cerebral hypoperfusion and hypoxia resulting (most commonly) from thrombosis, embolism, or systemic hypoperfusion

Clinical presentation

- Depends on which part of the brain is injured, and how severely it is injured.
- Sometimes people with stroke have a headache, but stroke can also be completely painless (at the beginning Asymptomatic).
- It is very important to recognize the warning signs (ex, elderly people and a person feels dizzy) of stroke and to get immediate medical attention if they occur (cause it can be prevented).
- - If the brain damage sustained has been slight, there is usually complete recovery, but most survivors of stroke require extensive rehabilitation .

F.A.S.T. Warning Signs

- **Use the letters in F.A.S.T. to Spot a Stroke**
- **F = Face Drooping** – Does one side of the face droop or is it numb? Ask the person to smile. Is the person's smile uneven?
- **A = Arm Weakness** – Is one arm weak or numb? Ask the person to raise both arms. Does one arm drift downward?
- **S = Speech Difficulty** – Is speech slurred?
- **T = Time to call 911** – Stroke is an emergency. Every minute counts. Call 911 immediately. Note the time when any of the symptoms first appear.

- Other Stroke Symptoms
- **Watch for Sudden:**
- **NUMBNESS** or weakness of face, arm, or leg, especially on one side of the body
- **CONFUSION,** trouble speaking or understanding speech
- **TROUBLE SEEING** in one or both eyes
- **TROUBLE WALKING**, dizziness, loss of balance or coordination
- **SEVERE HEADACHE** with no known cause

- Weakness or paralysis of one side of the body, opposite of the affected side of the brain (most common)

- Deep coma, paralysis of one side of the body, and loss of speech followed by death or permanent neurological disturbances after recovery (in cases of severe brain damage).

Hemorrhagic Stroke

- **Intracerebral Hemorrhage (ICH**) •
- **Subarachnoid Hemorrhage (SAH)** An episode of symptomatic neurological dysfunction caused by focal brain, retinal or spinal cord hemorrhage with evidence of acute hemorrhage on imaging (MR, CT, retinal photomicrographs), regardless of symptomatic duration.

Causes Hemorrhagic stroke

- Hypertension
- Trauma
- Bleeding disorders, medications (warfarin, ASA, clopidogrel)
- Amyloid angiopathy
- Arteriovenous malformations
- Recreational drug use (cocaine, amphetamines)
- Alcohol abuse
- Brain cancer/ tumours

Signs and Symptom

- Sudden weakness and/or numbness in part of the body
- • Difficulty talking or understanding.
- Difficulty in sight
- Dizziness or loss of balance
- Onset severe headache

Risk Factors

- Obesity
- Heavy drinking
- Illegal drug use
- Physical inactivity
- Hypertension
- High Cholesterol
- Diabetes
- Obstructive Sleep Apnea
- Cardiovascular diseases
- COVID-19 infection
- Personal or family history of CVA, Myocardial Infarction, or transient ischemic attack

Complications

- Paralysis
- • Difficulty communication
- Difficulty swallowing
- Vision loss
- Memory loos
- Pain
- Emotional problems

Changes in behavior and self-care ability

Diagnostic Tests

- Medical history and Physical Exam
- Lab blood test
- Electrocardiogram (ECG or EKG) other types of cardiac monitoring
- Radio diagnostic tests such as ultrasound, CT scan, MRI and MRA or CTA. Treatment- Immediate medical care is necessary because strokes are considered a medical emergency.
- Ischemic stroke - medications such as clot busting drugs and blood thinners. Carotid artery surgery if needed.
- Hemorrhagic stroke- surgical intervention if needed to control bleeding. Pain medications
- Therapy for residual effects; physical, occupational, and speech.

Glasgow Coma Scale

DOMAIN	RESPONSE	SCORE
Best Eye Opening	Spontaneous To Speech To Pain No response	4 3 2 1
Best Verbal Response	Oriented: person, place & time Confused Inappropriate words Incomprehensible sounds No response	5 4 3 2 1
Best Motor Response	Follows commands Localizes Withdrawal from pain Abnormal flexion (decerebrate) Abnormal extension (decorticate) No response	6 5 4 3 2 1
Brain injury Assessment tool	**Mild:** 13 or more **Moderate:** 9 – 12 **Severe**: 8 or less	Score needs to be recorded for each response and as a total

Management

- ***Goals of Treatment***
- Stabilize and transport
- Protect airway, ensure adequate ventilation and oxygenation and circulation
- Maintain strict blood glucose control
- Modify risk factors
- Prevent future recurrence of TIA or stroke
- Consideration for, or documentation of advanced care planning and goals of care

Non-pharmacologic Intervention

- Ensure an adequate airway, suction prn
- •NPO: Nothing by mouth until swallowing function is evaluated
- •Insert g urinary catheter if level of consciousness is impaired.
- urinary catheters should be avoided due to risk of infection; and used only if indicated

- Symptomatic treatment of pyrexia.

- Patients who are hypoxic should receive supplemental oxygen to maintain SpO2 >94 %. Supplemental oxygen should not routinely be given to non-hypoxic patients with acute ischemic stroke

Monitoring and Follow-up

- ***Monitoring and Follow-up***
- Monitor vital signs including neuro vitals clinically indicated
- Strict fluid intake and output
- A suspected stroke of any subtype (TIA, acute ischemic stroke, or hemorrhagic stroke)
- (requires an emergency consult)

stroke prevention

- Maintain a healthy lifestyle.
- Patients may need to take certain medications to reduce chances of getting a stroke
- Anti hypertensive medicines might be needed if blood pressure is high.
- Cholesterol-lowering medicines might be needed if blood cholesterol is high and by those who already have had a stroke irrespective of cholesterol levels.

- Hypoglycaemic drugs - Insulin and oral diabetes medicines might be needed for persons with diabetes
- Besides, certain medicines are commonly given to prevent a second stroke:
- Anticoagulants: prevent the blood from clotting and causing a stroke.
- Antiplatelet agents. Platelets are blood cells that help the blood clot when blood vessels are injured.
- Antiplatelet medicines prevent platelets from causing a clot in blood vessels.

- **Thank you**