



INTRODUCTION, TYPES OF STROKE AND ITS OBSTRUCTIVE SLEEP APNEA IN STROKE PATIENTS

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INTRODUCTION:

STROKE:

Stroke is a medical condition in which poor blood flow to the brain results in cell death. Stroke is one of the most common neurological disorders in clinical practice. According to WHO, it is the second commonest cause of death worldwide. It is forecasted that the deaths because of stroke will rise to 6.5 million by 2015 and by 2020, stroke and coronary artery disease are expected to be the leading causes of losing life. Earlier Surveys on stroke in different parts of India shown that the prevalence of stroke varies in different regions of India and ranges from 40 to 270 per 1, 00,000 populations. Stroke is responsible for around 11% of all deaths worldwide.

TYPES OF STROKE:

➤ There are two main types of stroke:

A) Ischemic

B) Hemorrhagic stroke

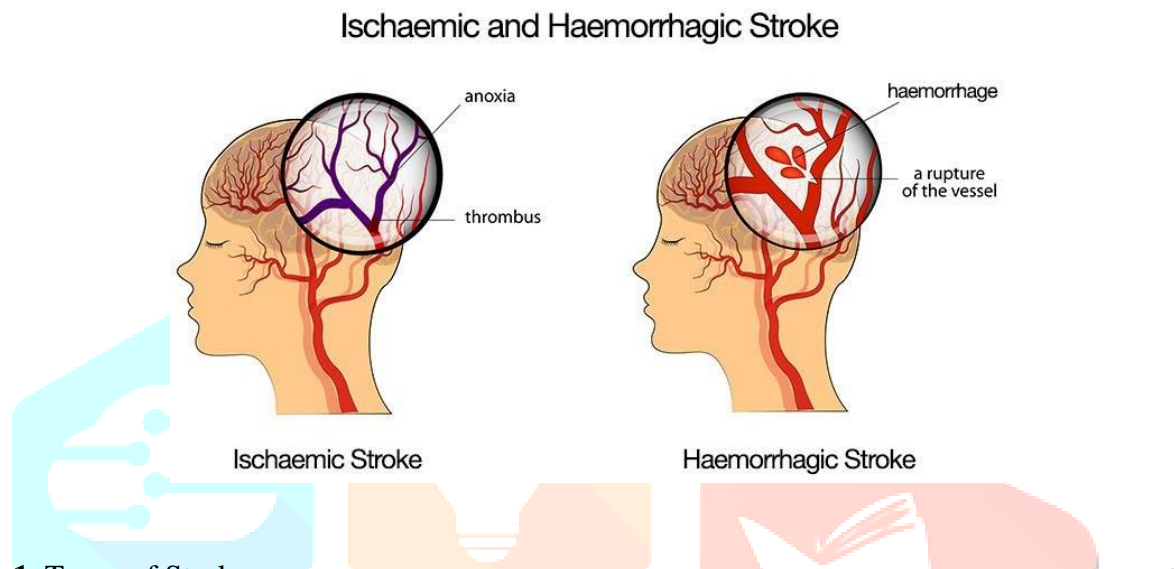


Figure1. Types of Stroke

Ischemic Stroke:

Majority of strokes occur when blood vessels to the brain become narrowed or clogged with fatty deposits called plaque. This cuts off blood flow to brain cells. A stroke caused by lack of blood reaching part of the brain is called an ischemic stroke. Most ischemic strokes occur between the ages of 71 and 80 years.

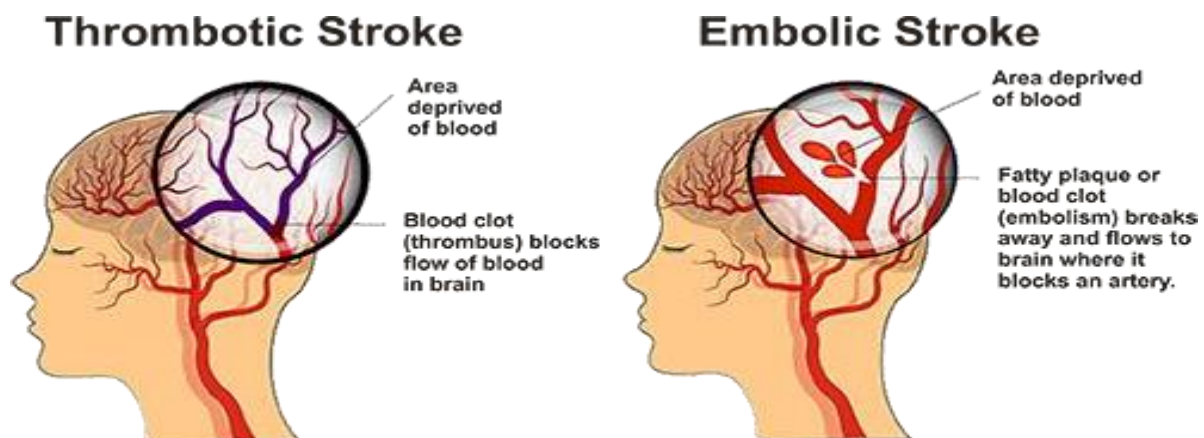


Figure 2: types of ischemic stroke

- There are two types of ischemic stroke they are:

Thrombotic Stroke:

Thrombotic stroke occurs by a blood clot (thrombus) in an artery going to the brain. The blood clot reduces or blocks blood flow to part of the brain. Blood clots usually form in arteries damaged by plaque.

Embolic Stroke :

It caused by a wandering clot (embolus) that's formed elsewhere (usually in the heart or neck arteries). Clots are carried in the bloodstream and block a blood vessel in or leading to the brain.

Hemorrhagic Stroke:

It is caused by burst or leaking blood vessels in brain. While most of the hemorrhagic strokes occurs between 60 and 70 years of age. Defining stroke types helps in determining the most effective therapy and is clearly related to prognosis. Stroke occurs predominantly in middle and late years of life.

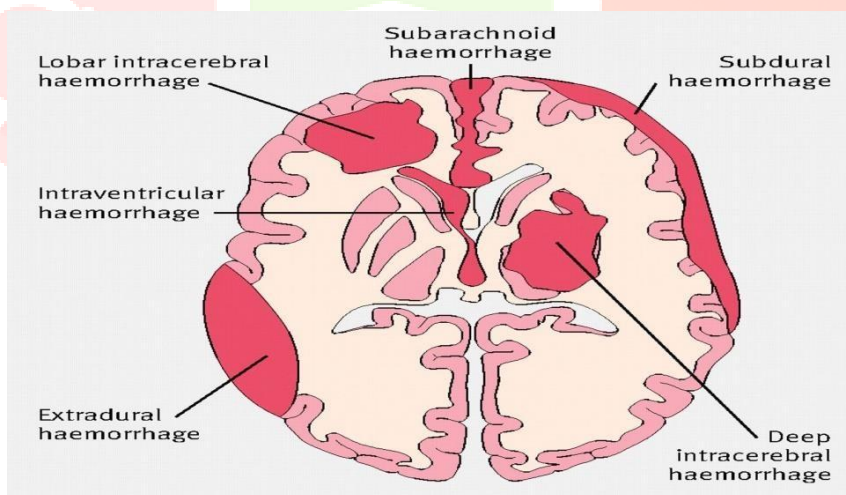


Figure 3:types of hemorrhagic strokes

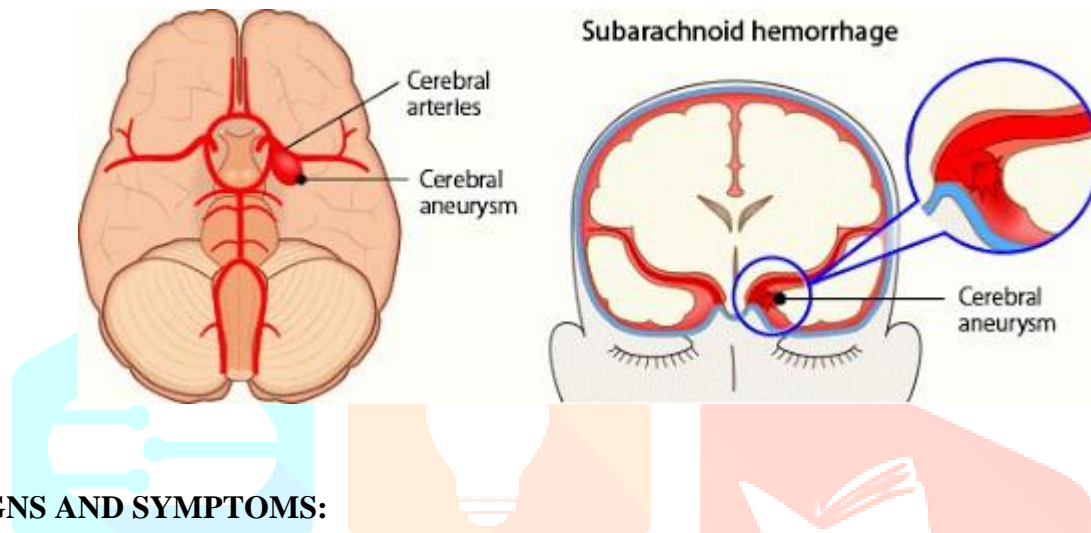
- There are two types of hemorrhagic strokes:

Intracerebral Hemorrhage (ICH):

It is the most common type of hemorrhagic stroke. It occurs when an artery in the brain bursts, flooding the surrounding tissue with blood.

Subarachnoid Hemorrhage (SAH): It is a less common type of hemorrhagic stroke.

It refers to bleeding in the area between the brain and the thin tissues that cover it.



SIGNS AND SYMPTOMS:

Signs and symptoms often appear soon after the stroke has occurred. If symptoms last less than one or two hours it is known as a transient ischemic attack (TIA) or mini-stroke. Numerous neurological, social and psycho emotional sequel of CVA are documented in the medical and psychological literature. The most well known and thought of consequence of CVA is motor disturbance with unilateral weakness (hemiplegia) or paralysis (hemi paresis). These deficits are frequently co morbid with in coordination, poor motor planning, loss of balance, ataxia and abnormal posture. In addition, survivors of stroke may experience altered level of consciousness, somatosensory deficits, and disorders of vision, severe pain and unilateral neglect. The effects of aphasia (disorder of language), dysarthria (impairment of articulation), and dysphagia (disruption of swallowing) may interact with one another and greatly diminish both expressive and receptive communicative ability to express needs or psychological states Social and Psycho emotional Complications. In addition to the impact of residual physiological deficits on the survivor's ability to maintain physical intimacy, there are broader implications for both the quality and level of their involvement.

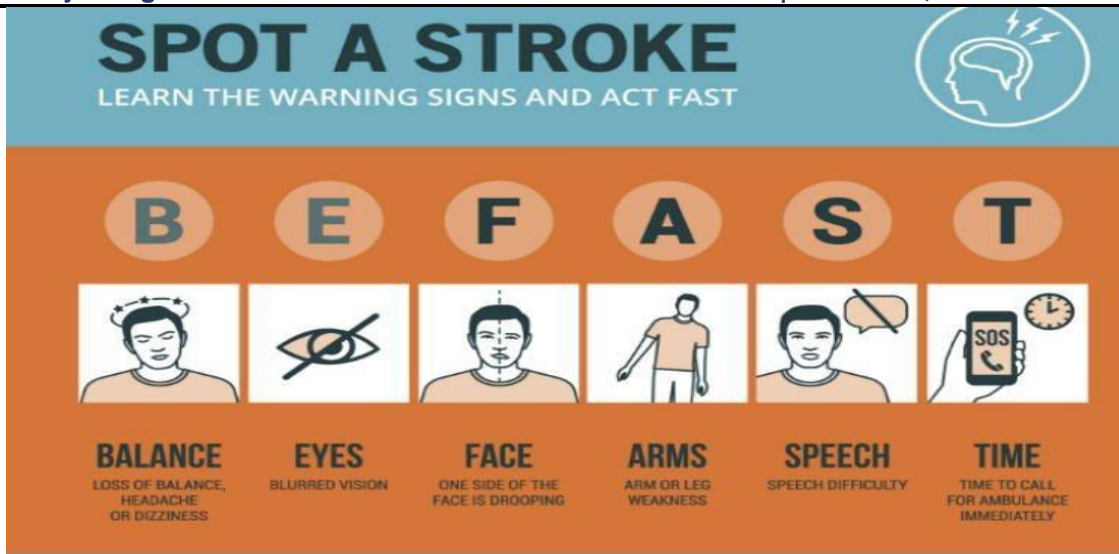


Figure 5. Warning signs for Stroke

RISK FACTORS:

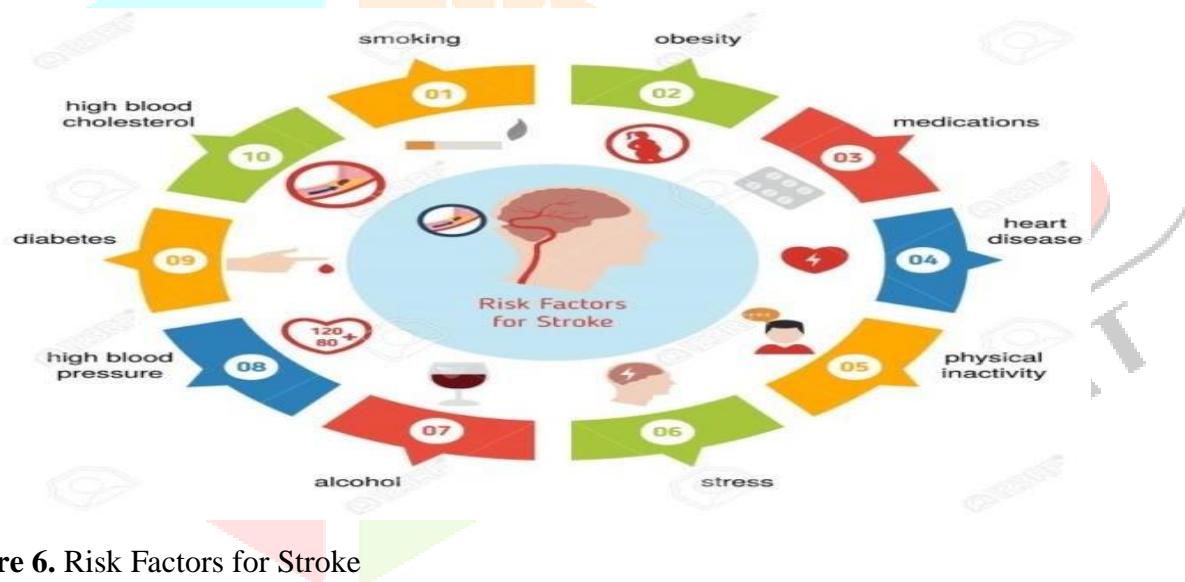


Figure 6. Risk Factors for Stroke

WAKEFULNESS & SLEEP:

Human sleep and awaken in a 24 hour cycle called circadian rhythm. That is established by the suprachiasmatic nucleus of the thalamus.

Reticular activating system;

Sleep;

Sleep is a state of altered consciousness or partial unconsciousness from which an individual can be aroused. Although it is essential, the exact functions of sleep are still unclear. Sleep deprivation impairs attention, learning & performance. Normal sleep consists of two components Non – rapid eye

movement sleeps (NREM), rapid eye movement sleeps (REM).

NREM sleep consists of four gradually merging stages

Stage 1; transition stage between wakefulness & sleep that normally lasts 1-7 minutes the person is relaxed with eyes closed & has fleeting thoughts. People awaked during this stage often say have not been sleeping.

Stage 2; light sleep it is the first stage of true sleep. In it a person is a little more difficult to awaken fragments of dreams may be experienced and the eyes may slowly roll from side to side.

Stage 3; is a period of moderately deep sleep body temperature and blood pressure decrease and it is difficult to awaken the persons. This stage occurs about 20 mins after falling asleep. Stage 4; this stage is the deepest level of sleep although brain metabolism decreases significantly and body temperature drops slightly at this time , most reflexes are intact and muscle tone is decreased only slightly when sleep walking occur if does so during this stage.

A person goes from stage 1 to stage 4 of NREM sleep in less than an hour. During a typical 7 or 8 hours sleep period there are three to five episodes of REM sleep during which the eye move rapidly back and forth under closed eyelids. The person may rapidly ascend through stages 3 and 2 before entering REM sleep. The first episode of REM sleep lasts 10- 20 minutes then another interval of NREM sleep follows .REM, NREM sleep alternate throughout the night. REM period which occurs approximately every 90 minutes gradually lengthen, until the final one lasts about 50 minutes. In adults, REM sleep totals 90-120 minutes during a typical sleep period. as a person ages the average total time spent during sleeping decreases and the percentage of REM sleep declines. As much as 50 % of an infants sleep is REM sleep as opposed to 35% for 2 years olds and 25% for adults.

PHYSIOLOGICAL CHANGES THAT OCCUR DURING SLEEP;

REM sleep; dreaming occur EEG similar to person who is awake .

Breathing & eye movements, most somatic motor neurons are inhibited during REM sleep. Skeletal muscle tone or paralysis

Activity in the Para sympathetic division (ANS) increases

Sympathetic; decreases

NREM sleep; heart rate & blood pressure decreases.

BRAIN WAVES PRODUCED:

Brain neurons are generating million of nerve impulses (action potential). These electrical signals are called brain waves. Brain waves generated by neurons close to the brain surface.

ALPHA WAVES: these rhythmic waves occur at a frequency of about 8-13 cycles per second (Hertz).

1 Hz is one cycle per second. Alpha waves are present in EEG of nearly all normal individuals when they are awake and resting with their eyes closed. These waves disappeared entirely during sleep.

BETA WAVES: the frequency of these waves between 14-30 Hz. Beta waves generally appear when the nervous system is active i.e. during periods of sensory input and mental activity.

THETA WAVES: Frequency of these waves 4-7 Hz. These waves normally occur in children and adults experiencing emotional stress. They also occur in many disorders of the brain.

DELTA WAVES: The frequency of these waves is 1-5 Hz delta waves occur during deep sleep in adults but they are normal in awake infants. When produced by an awake adult they indicate brain damage.

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