Journal of Modern Techniques in Biology and Allied Sciences
This Content Available at www.lapinjournals.com ISSN (O): 3048-9970
(An International online peer reviewed Journal)
Case Study Open Access

CASE STUDY ON STROKE

Kotla Renuka Sai Priya
Department of Pharmacy Practice, Hindu College of Pharmacy, Guntur

Article History: Received: 10 Nov 2024, Revised: 04 Dec 2024, Accepted: 18 Dec 2024

***Corresponding author**
Kotla Renuka Sai Priya

DOI: https://doi.org/10.70604/jmtbas.v1i2.31

Abstract
Stroke is the leading cause for most of the disabilities. One third of the population is suffering with stroke. It is the leading cause of morbidity and mortality after heart diseases. There are 2 types of strokes, in that ischemic stroke shows the high rate of deaths in developing countries. The most common risk factors are hypertension, diabetes, obesity. These are known to be increased with age and most seen in younger ages. Stroke is caused due to the loss of blood supply to the brain and lack of oxygen to the brain cells. Based on the diagnosis and treatment provided to the patient, they can experience temporary or permanent disabilities of stroke.

***Keywords*:** stroke, risk factors, management, rehabilitation, prevention.

Introduction

As per WHO definition, Strokeis an acute, focal or diffuse, dysfunction of brain, starting from vessels and lasting for longer period of time.It is a neurological deficit caused due to focal injury of CNS which even includes cerebral infarction and hemorrhage [1-6].

Fig: 1 stroke

Clinical Presentation

- Face dropping
- Arm weakness or paralysis
- Speech difficulties
- Time to act
- Blurred vision
- Head ache
- Walking difficulty [7]

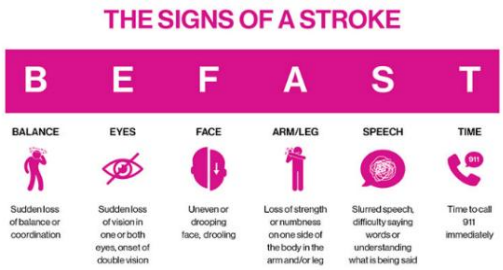

Fig: 2 symptoms of stroke.

Types

Stroke is classified into:

1. Ischemic stroke
2. Hemorrhagic stroke

Most of the 80% of cases are caused due to ischemic stroke and 20% is due to hemorrhagic stroke.

Ischemic stroke is further classified as:

1. Large vessel stroke
2. Small vessel stroke
3. Cardioembolic stroke

Large vessel stroke may be caused due to embolic or thrombotic occlusionin the arteries of brain.

Small vessel stroke is also called lacunar stroke, caused due to rupture of small blood vessels supplingblood to the deeper parts of the brain.
Hemorrhagic stroke is divided into:

1. Intracranial hemorrhage (ICH)
2. Subarachnoid hemorrhage (SAH)

These are caused due to the neuronal injury caused due to clot formation or may be because of the pressure by the adjacent structures of brain[8].

Risk factors

- Age
- Sex
- Race
- Family history
- Hypertension
- Diabetes
- Obesity
- Alcohol
- Smoking
- Tobacco
- Depression
- Peripheral vascular disease
- Hyperhomocystinuria
- Tuberculosis
- Hyperlipidemia
- Myocardial infarction
- Atrial fibrillation

Maximum 80% of the stroke cases are attributed to modifiable risk factors[9,10].

Pathophysiology

It includes various mechanisms and pathways such as: excitotoxicity mechanisms

- Inflammatory pathway
- Oxidative damage
- Apoptosis
- Angiogenesis.

The blood flow to the brain is managed by two internal carotids anteriorly to vertebral arteries posteriorly. Ischemic stroke is caused by deficient blood and oxygen supply to the brain. Hemorrhagic stroke is caused by bleeding or leaky blood vessels.
Ischemic occlusion generates thrombotic and embolic conditions in brain. In thrombosis, the blood flow is affected by narrowing of vessels due to atherosclerosis. The buildup of plagues will eventually constrict the vascular chamber and form clots, causing thrombotic stroke. In an embolic stroke, decreased blood flow to the brain region causes an embolism. The blood flow to the brain reduces, causing severe stress and cell death (necrosis). Necrosis is followed by disruption of the plasma membrane, organ swelling and leaking of cellular contents into extra cellular spaces and loss of neuronal function.
Hemorrhagic stroke accounts for 10-15% of all strokes and has high mortality rate. In this condition, stress in the brain tissue and internal injury cause blood vessels to rupture. It produces toxic effects in the vascular system, resulting in infarction[11,2].

Complications

Medical complication: venous thromboembolism, Pneumonia, Urinary tract infections, Neurogenic cardia damage, Sleep related breathing disorders, Depression,
Neurological complications: intracranial complication Seizures, Neurologic deterioration [12,13,14]

Diagnosis

Physical examination: it includes reflexes, sensation, muscle strength, vision and coordination.
CT perfusion: It provides information about capillary level hemodynamics of the brain parenchyma.
CT angiography: It helps to produce images of blood vessels and tissues in the various parts of the body.
MRI: It uses magnetic fields to find small changes in the brain tissue.
Doppler sonography: Test that uses sound waves to create pictures of carotid arteries. It shows if plagues have blocked arteries[15,16].

Treatment

Endovascular therapy: tissue plasminogen activator (tPA)
ICU management: oxygenation and ventilation. Oxygen is required when the patient saturation is below 94%.
Blood pressure management: It is done to avoid the risk of hypotension or hypovolemic shock.
For hypertension in non- cardioembolic stroke 'phenylephrine' is suggested.
Anticoagulants: warfarin, heparin
Antiplatelets: aspirin, clopidogrel
GABA agonists: clomethiazole
Sodium channel blockers: mexiletine, lubeluzole
Fibrinogen depleting agents: alteplase, Tenecteplase
Angioplasty and stem cell therapy [17,18,19,20].

Rehabilitation

- Speech therapy (understanding, relaxation and communication skills)
- Physical therapy (movement coordination)

- Occupational therapy (to improve daily activities)

Rehabilitation is the important thing for the people affected with stroke. It helps them to recover and return back to their works and social functions. Proper rehabilitation can reduce the risk of morbidity and mortality [21].

Prevention

- maintain healthy diet
- stop smoking and alcohol
- regular exercise
- stress management
- weight loss
- reduce salt intake[22].

Case Study

A 62years old female patient was admitted in neurology department with the chief complaints of weakness in left upper limb and lower limb. Her past history was normal. Lab data shows hemoglobin 12.1g/dl, total leucocyte count 8.900cell/mm, neutrophils 77%, lymphocytes 20%, eosinophils 03% and platelets 2.6lakhs, direct bilirubin 0.2mg%, indirect bilirubin 0.7mg%.Her vitals were BP-150/90 mmHg, PR-90 bpm,Spo2- 96% and temperature was normal. Colourdoppler study of neck vessels shows no abnormal findings. MRI reports revealacute right MCA territory infarct, subacuteinfarct involving left corona radiata and grade 3 small vessels disease involving bilateral corona radiata and centrum semiovale. MRA reports shows short segment eccentric narrowing noted involving left P1 PCA with stenosis up to 30-40%. Her reflexes were 1/5 for left upper and lower limbs, 5/5 for right limbs. Based on the data available she was diagnosedwith CVA- ischemic stroke associated with left hemiparesis. Medication includes T. Aspirin 150mg OD, T. Atorvastatin 40mg OD, T. Ca/Vit D3 OD, T. Amlodipine 5mg OD,T. Clopidogrel 75mg, Inj. Pantoprazole40mg IV OD, Inj. Optineurin 1amp in NS IV OD, IVF-2 NS and physiotherapy is recommended. Discharge medication includes:

T. Metrogyl 500mg OD
T. Moncef 200mg OD
T. Pantop 40mg OD
T. Aspirin 150mg OD
T. Atorvastatin 20mg H/s
T. Citocholoine500mg OD

Discussion

Stroke is a medical emergency caused due to interrupted blood supply, which leads to loss of brain function. Effects of stroke is based on the affected part of brain and its severity. Age and gender play a major role in increasing the higher risk of stroke at younger ages. Risk factor management and life style management helps in reducing the risk of stroke. Medical management like blood pressure, blood thinners also play main role in prevention and treatment.

Conclusion

This 62 years old female patient is diagnosed with acute right MCA infarction, left hemiparesis. Early recognition and management of ischemic stroke is important. The combination of pharmacological treatment and rehabilitative careprevent further cerebrovascular events and promote recovery of motor function. Proper control of blood pressureis essential for secondary stroke prevention.Regular follow-up and patient education on stroke risk factors and prevention are essential in managing the long-term outcomes of this patient.

References

1. Lujain Alrabghi, R. A. (2018). Stroke types and Managment. International Journal of Community Medicine and public Health.
2. 2. Diji Kuriakose, Z. X. (2020, october 15). Pathophysiology and Treatment of stroke: present status and future perspective .
3. Gidey K, H. A. (2023). A prospective study of stroke characteristics, risk factors, and mortality in a tertiary hospital of northern ethiopia. Dovepress taylor and francis group, 5051-5061.
4. Rockville Pike, B. M. (2023). Stroke. MedlinePlus.
5. Mcintosh, J. (2024, january 22). Everything you need to know about stroke .
6. Ralph L. Sacco, M. M. (2013). An updated defination of stroke for the 21st century . AHAIASA , 2064-2089.
7. Robert D. Brown, J. M. (2024, december 13). Stroke . Overview .
8. Chugh, C. (2019). Acute Ischemic Stroke: Managment approach . Indian Journal of critical care Medicine .
9. Amelia K Boehme, C. E. (2018). Stroke risk factors, genetics, and prevention. PubMed , 472-495.

10. Berkala Kedokteran, A. B. (2022). Identification risk factors of stroke: Literature review. research gate.
11. Prabal Deb, S. S. (2010). Pathophysiologic mechanisms of acute ischemic stroke. science direct , 197-218.
12. Koto Ishida, M. (2025, febuary 4). Complications of stroke: An overview .
13. Roland, J. (2024, march 18). what are the potential complications of stroke?
14. Prof Bruce C V Campbell PhD, P. P. (2020, july 17). Stroke . pp. 129-142.
15. Gaillard F, S. R. (2025, march 2). Ischemic stroke .
16. Berry, J. (2019). What to know about ischemic stroke . MedicalNewsToday.
17. Franzika Herpich, M., & Fred Rincon, M. M. (2020). Managment of acute ischemic stroke. ResearchGate .
18. Taallapalli, A. V., Mailankody, P., & Kulkarni, G. B. (2022). Managment of acute stroke. APIK journal of internal medicine , 153-163.
19. Ka Hou Christein Li, A. J. (2020, october 12). Acute ischemic stroke managment: concepts and controversies. A narrative review. pp. 65-79.
20. Ganti, L. (2025, january 7). Managment of acute ischemic stroke in the emergency departemnt: optimizing the brain .
21. James H. Brwer, M. (2024, april 17). Stroke rehalitation: what to except as you recover. MayoClinic .
22. Kumar, A. S. (2023). Stroke prevention. National library of medicine.