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Case Study *Medical research*

A case presentation on acute ischemic stroke

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ABSTRACT

Background information

A 52 years old male patient has been admitted in the hospital with the chief complaints of slurred speech, weakness in right extremities and he does have a medical history of hypertension, diabetes mellitus. As the patient is a hypertensive he is on Tab. Telmesartan 40mg and insulin. inj because of the diabetic condition. Patient is not on any kind of the anti-platelets drugs. When subject is admitted into the hospital emergency ward it was found that he is having global aphasia, hemisensory loss and right hemiplegia.

Investigations

Physical examination, laboratory tests, multimodal brain MRI scan, an echocardiogram, continuous cardiac monitoring.

Diagnosis

Acute ischemic stroke caused by distal left internal carotid artery occlusion, with salvageable penumbral tissue and a persistent large-vessel occlusion.

Treatment

Medical management with anti-platelet drugs, HMG-co-a reductase inhibitors and anti-epileptic drugs.

INTRODUCTION

Stroke is a medical condition where oxygenated blood is not supplied to brain and that leads to the death of that specific part of the brain. It is of two types they are ischemic and haemorrhagic ischemic condition occurred due to the lack of blood flow, decrease in the blood flow can be due to the blockage of the blood vessels which carries blood to brain blockage can be occurred due to the formation of the thrombi or embolus formation in the blood vessels [1]. Where as in the cases of the hemorrhagic stroke condition can be due to the leakage of the blood from the blood vessels to the brain and in some condition due to raised in the intracranial hypertension that occurs due to the bleeding. Complications of stroke include high blood pressure, smoking, obesity [2]

In case of Ischemic strokes treatment will be focused on restoring an adequate blood flow to brain is main criteria. Generally, treatment starts with a drugs that can break down clots and also

protect vessels from forming clots. Normally anti-platelets drug aspirin can be given in such condition. Tissue plasminogen activator (TPA) is very effective and efficient drug that can dissolving clots, but it should be given within less than 4.5 hours of stroke symptoms starting [3, 4].

In emergency condition the procedure will be starts by giving tissue plasminogen activator directly into an artery of the brain or using a catheter to remove the clot. A carotid endarterectomy is another kind of technique which involves opening the carotid artery and removing plaque which has potently to block the vessels [5]. Angioplasty is also another kind of technique which involves a surgeon inflating a small balloon into a narrowed artery via catheter and then inserting a mesh tube called a stent into the opening. This procedure prevents the artery from narrowing again [6].

In case of hemorrhagic stroke which is caused due to blood leakage from blood vessel into brain. In this condition treatment will mainly focus on controlling the bleeding and reducing the pressure on the brain. For this condition treatment will starts by giving the drugs which has a capability to reduce pressure within brain and also to monitor the subject carefully if any of the complications is noted like raised blood pressure, seizures and etc. those all can be controlled by giving drugs.

While treatment an important note should be considered that to stop the subject from taking blood-thinner anticoagulants. Drugs which can counter the effect of blood thinner should be given to control blood loss. In some cases, surgery will be done to prevent the stroke small clamps will be placed at the base of aneurysms to prevent rupture.

In some cases, hemorrhage can be caused by arteriovenous malformations (AVMs). AVMs is an abnormal condition between arteries and veins [7]. This can be appeared in any location it can cause severe pain or some other condition. Generally, AVMs can be congenital. Surgery can be used to remove them if they are not too big and not too deep in the brain.

CASE PRESENTATION

A 62 years old male patient has been admitted into the hospital with the chief complaints of slurred speech, weakness in right extremities. Subject is having medical history of hypertension and diabetes mellitus from past 10 years and he is on oral anti-hypertensive drug T.telmesartan and on inj.insulin. Subject have a social habit of smoking and drinking occasionally. He underwent the medical examination tests like CBP which includes RBC, WBC, and some other important CBP test were done, Urine analysis was advised. Magnetic resonance imaging was advised.

Generally in the case of acute ischemic stroke conditions physicians do advice the tests like CT (computed tomography) of the head in this test multiple images will be taken with the help of the sophisticated computers, contrast material will be injected i.v and cerebral blood vessels. In order to detect the blood flow called CT perfusion (CTP). Another best radiological method for stroke detection is magnetic resonance imaging (MRI) which is a powerful magnetic field, in order to detect the blood flow in the vessels magnetic resonance perfusion (MRPs) [8]

HAEMATOLOGY

RBC : 4.0 millions / mm^3.
WBC : 14,650 cells / mm^3
Hb : 9.8 g/ d L.
Platelets : 4.06 lakhs / mm^3
N : 86%
L : 09 %
B : 00%
E : 01%
M : 04%
MCV : 99.2fl
PCV : 36.2 vol%
MCHC : 32.4 g/d L
HOMOCYSTEINE: 112 µmol/L
Vitamin B12 :80 ng/L

Urine analysis

Reaction : Acidic
Proteins : ++
Sugars : ++
Blood : Plenty
Pus cells : 6-10 / hpf
Appearance : Slightly turbid

MRI reports

Massive infarct in left occipital region.

DISCUSSION

Patient was admitted in the hospital with the chief complaints of slurred speech, weakness in right extremities, cough, shakiness and sweating. Physician has advised anti-hypertensive drugs anti platelets, HMG-co –A reductase inhibitor while the treatment is ongoing patient on day 2 has experienced partial seizures so in order to counter act that anti-epileptic drug has been advised. Main goals for the treatment to this patient are to reduce weakness in right extremities and to reduce morbidity and mortality of the patient was considered as the main patient specific goals. He was advised with drugs clopidogrel+aspirin 75 mg which is an anti-platelet drug given to control platelets aggression, leviteracetam 500mg anti – epileptic drug given in order to control the seizures which has occurred, metoprolol 12.5mg anti-hypertensive drug given inorder to control the complications of the stoke that is atrial fibrillation, human actrapid insulin10U, cefoperazone+sulbactum 3rd generation cephalosporin antibiotic drug1.5gm and rosuvastatin10mg HMG- Co A reductase inhibitor drug used to control the formation of the atherosclerosis. As per the reports obtained subjects vitamin B12 values are 80 ng/L which is below the normal levels of the vitamin B12 it clearly indicates that patient is having vitamin B12 deficiency anaemia so T.genoplex forte 200mcg supplements are advised.

Clinical pharmacist intervention

As the patient is on beta-blocker (metoprolol) and also on the insulin. Beta-blockers like metoprolol can also mask the signs of the hypoglycaemia effects like tachycardia and some other that may lead may leads to difficult for the patient to recognize an oncoming event. Inhibition of catecholamine-related glycogenolysis and glucose mobilization along with beta-blockade can trigger insulin-induced hypoglycemia in diabetics which leads to delay in the recovery of normal blood glucose levels. Arise in the blood pressure and decreased heart rate also been seen during hypoglycemia in diabetics treated with insulin and beta-blockers due to blockage of catecholamines like epinephrine effect on beta-2 adrenergic receptors, which leads to activation of alpha-adrenergic effects like vasoconstriction. In order to counter this mechanism as it is known that beta blocker is of two types they are cardioselective and non-cardiac selective agents, generally cardioselective agents like atenolol, metoprolol, etc are safer drugs than non- cardioselective drugs. But in the higher dose cardioselective drugs are also dangerous to the subject [9]. Subjects are advised to regular monitor of the blood glucose levels and also aware of certain symptoms of the hypoglycaemia such as tremor and tachycardia may be masked. But few other symptoms cannot be masked.

Discharge medications

- Tab. Telma 40mg should be taken for 14 days should be 8 pm.
- Tab. Clopitab-A 75mg should be taken for 14 days daily at 2 pm.
- Tab. Rosuvas 10 mg should be taken for 14 days daily at 8 pm.
- Cap. Optineuron should be taken for 30 days daily at 8 pm.
- Inj. Human mixtard 10u s/c should be taken for 30 days.
- Tab. Genoplex forte 200mcg should be taken for 30 days.

Life style modifications

Don’t skip the prescribed medications. Avoid smoking, alcohol and stress. Maintain good food habits stop taking high cholesterol food better to consume fibre food, decrease the intake of salt. A regular moderate exercises need to be performed.

CONCLUSION

Awareness regarding the stroke signs and symptoms need to been created and educate the people. If the subject is identified with the stroke symptoms without any delay he/she need to be rushed into hospital. In early of 20 th century for the treatment of the stroke scientists has found a tissue plasminogen activator or t-PA, and approved to treat strokes caused by blood clots, but due to its limitations this is not advised in all the condition, so again in 21th century clot retrieval technology was found and it was approved by the FDA. These two techniques are not sufficient for the treatment of stroke in all multi ethnic groups so more productive trials need to be conducted.

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