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Case Study

AORTIC VALVE REPLACEMENT-A CASE STUDY

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ABSTRACT

Aortic valve replacement will be planned for those who are having failure or regurgitation of aortic valve of the heart. Aortic regurgitation is the flow of blood back into the left ventricle from the aorta during diastole. Hence it needs adequate care and management. Early diagnosis and early treatment process may reduce the complication of the disease condition.

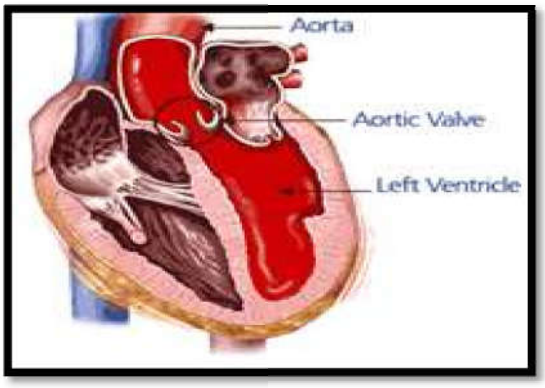
INTRODUCTION

Aortic valve replacement will be planned for those who are having failure or regurgitation of aortic valve of the heart. Aortic regurgitation is the flow of blood back into the left ventricle from the aorta during diastole. It may be caused by inflammatory lesions that deform the leaflets of the aortic valve, preventing them from completely closing the aortic valve orifice. This valvular defect also may result from endocarditis, congenital abnormalities, diseases such as syphilis, a dissecting aneurysm that causes dilation or tearing of the ascending aorta, or deterioration of an aortic valve replacement.

Rheumatic fever is an inflammatory disease that occurs following a Streptococcus pyogenes infection, such as streptococcal pharyngitis or scarlet fever. Believed to be caused by antibody cross-reactivity that can involve the heart, joints, skin, and brain, the illness typically develops two to three weeks after a streptococcal infection. Acute rheumatic fever commonly appears in children between the ages of 6 and 15, with only 20% of first-time attacks occurring in adults. Aortic regurgitation is common with these disease conditions; this may lead to aortic stenosis and needs aortic valve replacement.

Case study of Master X

Master X of 16 years old male, presented with the history of breathlessness and palpitation since one month. He was on regular medical surveillance for aortic valve regurgitation but since he had increased symptoms and class III dyspnoea he was posted for emergency surgical management. He is a known case of Rheumatic heart disease. There is no family history of cardiac disease and hypertension. X ray chest revealed cardiomegaly and Echocardiography revealed left ventricular hypertrophy with mitral valve regurgitation. Master X was diagnosed to have Rheumatic heart disease and Aortic valve regurgitation.



Aortic valve regurgitation is the flow of blood back into the left ventricle from the aorta during diastole. It may be caused by inflammatory lesions that deform the leaflets of the aortic valve, preventing them from completely closing the aortic valve orifice. Rheumatic fever is an inflammatory disease that occurs following a Streptococcus pyogenes infection, believed to be caused by antibody cross-reactivity that can involve the heart too.

Incidence

Found more often in men than women. It is diagnosed in all age group.

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Etiology

Various infections
Poor nutrition
Idiopathic genetic predisposition
Inflammation
Neuromuscular dysfunction
Systemic hypertension
Endocarditis
Congenital abnormalities
Dissecting aneurysm that causes dilation or tearing of the ascending aorta

Pathophysiology

As a result of various etiological factors, the blood from the aorta returns to the left ventricle during diastole in addition to the blood normally delivered by the left atrium. So the left ventricle dilates, trying to accommodate the increased volume of blood. It also hypertrophies, trying to increase muscle strength to expel more blood with above normal force raising systolic blood pressure. The arteries attempt to compensate for the higher pressures by reflex vasodilation. The peripheral arterioles relax, reducing peripheral resistance and diastolic blood pressure leads to aortic regurgitation.

Clinical manifestation

Book picture	Patient picture
1. Excertional dyspnea	Present
2. Orthopnea	Present
3. Paroxysmal nocturnal dyspnea	Present
4. Fatigue	Present
5. Poor weight gain	Present
6. Visible pulsatile carotid and temporal arteries	Present

Diagnostic evaluation

X –ray chest: cardiomegaly
ECG: left ventricular hypertrophy
Echo: left ventricular hypertrophy with mitral valve regurgitation
Urine culture: No growth.
Complete blood analysis: Normal findings

Management

Medical management

- Rest
- Antibiotics
- Nutritional supplements
- Anti inflammarory medications

Surgical management

Valvoplasty
Valve replacement

Management for Master X

Inj. Cefotaxime 1gm IV Bd
Inj.ciproflaxin 200mg IV Bd
Inj. Metrogyl 500mg IV Tds
Inj. Diclofenac sodium75mgIM Bd
Inj. Derryphylline 220mg IV Bd
Inj. B complex 5mg IM od
Inj. Dexamethasone sodium phosphate 4mg IV Bd
Cap. Omeprazole 20mg Bd
Inj. Garamycin 80mg IV BD

Aortic valve replacement: Under ETGA in supine position, median sternotomy done. Pericardial cradle created. Heart opened and aortic valve visualized. The valve replacement done. Weaned off cardio pulmonary bypass, heart came in sinus rhythm. After perfect haemostasis, chest closed in layers with right pleura pericardial drains.

Complications

- CHF
- Cardiac conduction defects
- Embolism
- Infection

Nursing intervention

- Acute pain related to inflammation secondary to surgical manipulation. Patient's pain level was assessed, analgesics administered, diversional therapy was provided, restricted visitors, and adequate rest was provided.
- Risk for decreased cardiac output related to reduced ventricular function secondary to extra corporal circulation. Complete bed rest was provided. Administered medications, fluids were restricted, vitals frequently monitored,
- Risk for ineffective breathing pattern related to prolonged bed rest, mechanical ventilator support. The respiratory status was assessed, oxygen therapy was provided, adequate mental and psychological support was provided and bronchodilators were administered.

Summary

Master X was a very cooperative and his family members too. They followed all the instructions given by the health team personnel. He was cstable during his hospital stay.

CONCLUSION

People with aortic regurgitation and stenosis needs proper care and attention to avoid future complications. Hence needs periodical follow up and management. The nurse should include family members and other support systems when planning the patient care for such patients.

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