International Journal of Science Academic Research
Vol. 05, Issue 08, pp.8082-8087, August, 2024
Available online at http://www.scienceijsar.com
ISSN: 2582-6425

Research Article

CLINICAL INSIGHTS INTO AORTIC ROOT ANEURYSM: A DETAILED CASE ANALYSIS

***Mohsina Aalia Mushtaq**

Department of Nursing, Islamic University of Science and Technology, Awantipora, Jammu and Kashmir, India

Received 17th June 2024; **Accepted** 20th July 2024; **Published online** 30th August 2024

Abstract

An aortic root aneurysm is a dilation or enlargement of the aortic root, the section of the aorta attached to the heart where the aortic valve is located. This condition can be associated with connective tissue disorders such as Marfan syndrome, Ehlers-Danlos syndrome, or bicuspid aortic valve disease. The aneurysm poses significant risks, including aortic dissection or rupture, which can be life-threatening. Diagnosis is typically achieved through imaging techniques such as echocardiography, CT scans, or MRI. Treatment options depend on the aneurysm's size and rate of growth and may include careful monitoring or surgical intervention, such as valve-sparing root replacement or composite graft replacement. Early detection and management are crucial for preventing complications and improving patient outcomes**.**

- General Objectives:
- To collect baseline information from the client.
- To be able to come up with an understanding of the disease process and formulate a comprehensive Nursing care plan using the specific objectives of Nursing process.
- Specific Objectives:
- To review the physiology of the Disease.
- To understand the pathophysiology of the disease.
- To know the medical treatment such as medications and laboratory works involved.
- To know the importance of laboratory & diagnostic procedures.
- To know the Nursing Management for the disease.
- To practice nursing assessment during data gathering.
- To prioritize identified health problems of the patient.

Keywords: CTS, TDS, ts, Relay, Adaptive, CTR.

INTRODUCTION

Biographic Information:

Name	XXX
Age	60 Years
Sex	Male
Ward	MICU
Address	Kanmoh, Zaiwan
Religion	Islam
Marital Status	Married
MRD No	1292371
Income	20,000/- month
Occupation	Retired Government employee now Auto driver
Language	Kashmiri, Urdu
Qualification	10th Standard
Name of Attendant	XYZ
Relationship with client	Wife
Date of Admission	27-5-2022
Diagnosis	Aortic Root Aneurysm

Chief Complaint (Reason for hospitalization):

Patient was in his usual state of health when he started complaining of Breathlessness at 07:00 am in the morning with severe chest pain radiating towards back.

History of Present illness:

The patient was in his usual state of Health when he stated complaining of Breathlessness and pain in the morning with sudden onset, worsened in supine position, associated with cough and mild expectoration. Patient was having mild retrosternal pain with coughing.

History of past Illness:

- Medical History: - Hypertension for 5-6 years
- Surgical History: - Road traffic accident with Trauma to chest 10 years back.

Developmental History:

- Neonatal: -

Birth Weight: Normal
Birth Condition: Stable

- Toddler: -

Development: Good
Any Abnormal Condition: No abnormality

- Childhood: -

Growth: Normal
Condition: Stable – No Disease present

- Adolescence: -

Growth/Nutritional Needs: Good/Fulfilled
Diseases Condition: No Diseased condition found.

- Adulthood: C2H5OH Abuser, regularly from 10-15 years in Moderate quantity, HTN for 5-6 years, smoker.

Details of Immunization:

Immunization = Complete
Vaccination for covid-19 = Both Doses.

Family History of any illness:

03 Brothers and 03 Sisters ----------All Healthy

03 Children ----------All Healthy

Socio-Economic Status:

Marital Status: - Married
No of Children: - 03
Total Monthly Income: - 20,000/- month
Housing Condition: Pacca House
Electricity Facility: - Available

Personal History:

Diet: Mixed Diet
Hygiene: Satisfactory
Life Style: Smoker (CH5OH abuser)

Environmental History:

- Drinking Water Supply: - Tap water
- Environmental Sanitation: Good/Acceptable
- Waste/Excreta Disposal: Dumping
- Presence of flies/mosquitoes/rodents: No

Psychosocial History:

- Language: Kashmiri, Urdu
- Relationship with family members: Good
- Social Support: Available and Good

Physical Examination:

- General Behavior and appearance: -
- Orientation: Good
- Dress/Grooming: Grooming is satisfactory and dressing is appropriate to climate.
- Posture/Gait: Not well
- Speech: Low tone
- Activity Level: Nil
- Rapport: Maintain good rapport

Anthropometry:

Height = 5'7'
Weight = 75 kg

Head to toe examination:

- Head:
  - Position: Normal
  - Size: Normal
  - Symmetry: Symmetrical

Hair and Scalp:

Quantity: Thin
Distribution: Baldness
Dandruff: Absent
Lesions on Scalp: Absent'

Face

Shape: Round
Symmetry: Symmetrical
Involuntary Movement: Absent

Eyes:

Eye brows: Normal
Eye lashes: Normal
Alignment: Well aligned
Eye lid: Puffy
Wear glasses: No

Ears

Color: Brownish
Size: Normal
Angle of attachment: Normal

Nose:

Symmetry: Symmetrical
Discharge: Not Present

Throat

Color of lips: Brownish
Buccal Mucosa: Normal, Tongue- Moist
Teeth: Yellowish, Dental Carries

Neck:

Size: Normal
Symmetry: Normal
Range of Motion: Restricted Movements
Lymph Nodes: No swelling/Normal

Chest:

- Inspection:

Skin: Normal
No redness
Equal Movement on both sides
No scars/Bulge

- Palpation: Equal Movement on both sides
- Percussion: Resonant Note +

Cardiac Dullness+

- Auscultation: Diffused Wheezing

CVS:

Any Bulging: Absent
Heart Rate: 100 bpm
Sound: Systolic Murmurs

Abdomen:

- Inspection: Umblicus ----flat

No Abnormal swelling seen

- Palpation: Soft

Non-Tender
No Organomegaly

Musculo Skelton System:

Normal Tone
No Muscle Atrophy
Swelling in limbs

Integumentary System:

- Inspection: Skin is wet due to sweating.

Swelling in limbs

Palpation: No Swelling or mass detected

➢ **Neurological System:**

Level of Consciousness: Fully Conscious (GCS =15/15) oriented to time, place and person.

Endocrine System:

Enlargement of thyroid gland: Not Present

Excretory System:

Urine output: Adequate
Constipation: Present

Vital Assessment:

Pulse: 100 bpm
B.P = 130/70 mmhg
Temperature: Afebrile
Respiration Rate: 16
SPO2:95/-

Laboratory Investigation:

CBC:

Parameter	Results	Limit
WBC	10-19	5.0-10.00
Neu	7.46	2.00-7.50
Lym	2.21	1.30-4.00
Mon	0.37	0.15-0.50
EO	0.10	0.00-0.50
NEU%	73.2	40-75
RBC	4.07	4.50-5.50
HGB	12.6	14.0-17.4

KFT/ Serum chemistry

Parameter	Test Results	Reference
Glucose	86.0	60-110
Urea	46.7	18-55
Creatinine	0.48	0.7-1.3
Uric Acid	6.04	3.5-7.2

Alkaline Phosphatase:-

Parameter	Test Results	Reference Range
Bilirubin	0.78	0.1-1.2
SGOT (AST)	38.8	0.35
SGPT (ALT)	39.0	0.41
Alkaline phosphate	74.4	40-129
Total Protein	6.02	6.4-8.3
Albumin	3.59	3.5-5.2
Globulin	2.4	2.2-3.1

Disease Condition: Aortic Aneurysm

Description of disease condition:

An aneurism is a localized sac or dilation formed at the weak point in the wall of the artery. It may be classified by its shape or form. The most common forms of aneurysm are saccular and fusiform. A saccular Aneurysm projects from only one side of the vessel. If an entire arterial segment becomes dilated a fusiform Aneurysm develops. Very small Aneurysm due to localized infection are called meiotic Aneurysm. Aneurysm are serious because they can rupture, leading to hemorrhage and death.

Thoracic Aortic Aneurysm:

Approximately 85% of all cases of thoracic aortic Aneurysm are caused by atherosclerosis. They occur most frequently in men between ages of 40 and 70 years. The thoracic area is the most common site for a dissecting Aneurysm. About 1/3rd of the patients with thoracic Aneurysm die of rupture of the Aneurysm.

Disease Condition: Aortic dissection

Description of disease condition:

Aortic dissection is the longitudinal splitting of the media (muscular) layer of the aorta by blood flowing through it. Dissection occurs following a tear in the intima or inner lining of the aorta which allows blood to dissect between it and the medical layer. As the dissection progresses, blood flow through the arterial branches of the aorta becomes blocked, and blood flow to the organs that are served by these branches is reduced. Aortic dissections occur more often in men between 50 & 70 years of age, most of whom are hypertensive.

Pathophysiology

- The initiating event in an aortic dissection is a tear in the intimal lining of the Aorta.
- Due to the high pressures in the aorta, blood enters the media.
- The high pressure rips the tissue of the media part.
- This can propagate along the length of the Aorta for a variable distance forward or backwards.

Management:

- **Medical Managements:**

1) Emergency management is directed at lowering the blood pressure to decrease the force of the blood tearing the aorta.
2) Patent Vasodilators, such as nitroprusside, are used to quickly reduce B.P.
3) Beta blockers can also reduce the Myocardial Contractility.
4) If the patient in stable, management it directed at pain reduction, blood transfusion and management of HF as needed.

- **Surgical Management**

1) Surgery is used for clients whose condition is unstable, in whom HF develops, who have leaking blood, who have occlusion of arteries to major organs.
2) During surgery the torn area is resected, and repaired with synthetic graft.

Etiology / Risk factors:

Book Picture	Patient Picture
• High blood Pressure	Hypertension for 5-6 years
• Atherosclerotic Disease	Smoker
• Obesity	C_2H_5OH abuser
• Smoking	Trauma to chest
• High intake of fat and Cholesterol in diet	
• Pregnancy	
• Heavy Alcohol Consumption	
• Drug abuse, especially Cocaine	

Clinical manifestations:

Book Picture	Patient Picture
• Back Pain	Chest pain radiating towards back.
• Cough	Dry cough
• Weak, Scratchy voice	Hoarseness in voice.
• Shortness of breath	Breathlessness.
• Tenderness or pain in the chest	

Diagnostic Evaluation

Book Picture	Patient Picture
• History Collection	Health History
• Physical Examination	P.E
• Ultra sound	ECG
• CT scan	Echocardiography
• Angiography	CT Angiogram
• MRI	

Management

- **Medical Management:**

1) Beta blockers: can lower blood pressure by slowing the heart rate.
2) Angiotensin II receptor blockers: These medications may be used if Beta blockers can't be taken or if they don't Completely Control Blood Pressure. Examples include losartan, valsartan (Diovan)
3) Statins: These medications can help lower cholesterol, which can help reduce blockage in the arteries and reduce the risk of Aneurysm complications. Examples include atorvastatin (Lipitor), lovastatin (ALTOPREV).

Surgical Management:

- Open chest Surgery: This Surgery generally involves removing part post of the aorta damaged by the aneurysm. The section of aorta is replaced with a synthetic tube (graft), which is sewn into place.
- Aortic Root Surgery: This type of open chest surgery is done to treat an enlarged section aorta to prevent a rupture. A Surgeon removes part of the aorta and sometimes the aortic valve. A graft replaces it. The aortic valve may be replaced by a mechanical or biological valve. If the valve is not removed, the surgery is called Valve - sparing aortic root repair.
- Endovascular Aortic Aneurysm repair (EVAR): The surgeon inserts a thin, flexible tube (Catheter) into a blood vessel, usually in the groin and guides it to the Aorta. A metal mesh tube (graft) attached to the end of the catheter is placed at aneurysm site. Small hooks / pins hold it in place.

Assessment

- **Subjective Data:**

After introduction, the patient as well as his wife agreed to explain the problem. The patient complaining of pain radiating towards back in the chest. The pain aggravated by lying supine. The attendant describes the pain as “tearing” pain.

- **Objective Data:**

On accessing the patient, the patient seemed in pain, distress & irritable.

Vital Sign:

PR	100bmp
B.P	130/70mmhg
T	Afebrile
RR	16
SPO_3	95%

Nursing care Plan

Nursing Diagnosis	Goal/ Objective	Nursing Interventions	Evaluation
Decreased Cardiac output related to the disease condition as evidenced by sudden and severe chest pain, difficulty in breathing and fatigue.	To maintain adequate cardiac output	Assessed the patient vital signs and characteristics of heart beat. Administered prescribed medication for aortic aneurysm. Administered supplemental oxygen as prescribed.	Cardiac output was maintained to a certain extent.
Acute pain related to decreased Myocardial blood flow related to the Disease process as evidenced by verbalization of sudden and sever chest pain and restlessness	To demonstrate relief in pain	Administered prescribed medication that alleviates the symptoms of chest pain. Assessed the patient vital signs and characteristics of pain after administration of medication	Patient was relieved of pain.
Fatigue related to an imbalance between supply and demand as evidenced by limited range of motion and weakness.	To maintain or enhance sense of energy	Examined the patient medication regime. Examined the patient vital signs. Determined whether sleep difficulties exist and how severe they are.	Level of energy was maintained to a certain extent.
Anxiety related to close monitoring by medical staff as evidenced by restlessness	To make the client demonstrate positive coping method	Assessed the client anxiety level through nonverbal communication. Acknowledged the awareness of the client’s anxiety.	Anxiety was reduced to a certain extent.

Drug Chart

Name of the Drug	Pharmacological Action	Dosage	Route	Indication	Contraindications	Side effect	Nurses Responsibility
Storvas 40mg (Atorvastatin)	Cholesterol is made by enzyme HMG-COA reductase. This tablet inhibits this enzyme, thus lowering LDL levels, TAG also increases HDL Levels.	40mg OD	Oral	Dyslipidemia Hyperlipidemia Angina	Hypersensitivity Liver Disease Pregnant\ Lactating	Headache. Nausea Diarrhea Body pain Abnormal LFT and Creatinine Level	Obtain LFTs during therapy; discontinue drug if AST or ALT level increase to 3 times normal level.
Telvas 40mg	It is an angiotensin receptor blocker (ARB). It relaxes blood vessels by blocking the action of a chemical that makes the blood vessels tighter. This lowers B.P	40mg OD	Oral	Hypertension Diabetes Risk for heart attacks Strokes.	Renal Disease. Impaired liver function	Upper respiratory tract infection, sinusinfection back pain Diarrhea	Monitor potassium level and make sure the patient is not taking potassium supplements.
Nebivolol (Nodon)	It is a beta blocker works by slowing down heat rate and makes the heart more efficient at pumping blood	20 mg OD	Oral	Hypertension prevention of Heart attack Strokes Migraine	Sinus. Brady cordial. Hypotension. Allergy	Nausea, Headache Fatigue constipation Diarrhea Dizziness cold extremities	Check for allergies, Heart rate, Blood Pressure before administrating the medications.
Pantoprazole (Pantocid)	Suppresses gastric Aid secretion by inhibiting the Parietal Cell H/K ATP pump	40mg BBT	Oral	Short term treatment of duodenal ulcers benign gastric ulcer	Hypersensitivity to pantoprazole	Chest pain migraine Anxiety Dizziness Headache	Assess for allergies and history of liver Disease. Should be given before meals.
Ipravent	It is an anti-cholinergic medication .It works by relaxing the Muscles in the airways and makes breathing easier	8 hourly	Inhalation	COPD Asthma Chronic Bronchitis emphysema	Allergy Pregnancy. Prostatic hypertrophy. Bladder neck obstruction	Headache Dizziness throat irritation cough Dryness in mouth Nausea	Teach patient proper use of inhaler
Hydrocortisone	It is a steroid which works by blocking the production of certain chemical messenger in the body that cause inflammzation as allergies.	100mg	IV	Severe allergic reactions. Cancer Skin disorders	Inactive TB. Diabetes. Pheochromocytoma. Hypokalemia. Psychotic disorder	Injection site pain swelling redness Mood changes, Risk of infection weight gain.	Monitor sings of hypersensitivity
Hepaxin	It is an anticoagulant used to prevent blood clots	5000 u	S.C	DVT Pulmonary embolism. Prevention of clots during surgeries	Allergy. Uncontrolled Active bleeding. Thrombocytopenia	Abdomen Pain, Bleeding gums. Headache. Constipation, Nausea, vomiting	It should not be injected into muscles. Close monitoring of K Level as it causes hyperkalemia

Progress Note:

1st Day: - on the day of 27-05-2022, the patient namely XXX was admitted to MICU from emergency section of SKIMS, Soura. The patient was diagnosed with Aortic root aneurysm with Dissection. Patient is Conscious and well oriented. I checked the vital Sings and recorded them. The patient had pain and was feeling restless and discomfort. He was also put on artificial ventilation.

Vital Sings

PR--------- 100bpm
BP---------130/70 mmHg
RR---------16
SPO_2-------95%

2nd day: -The patient still had chest pain with stable GCS. On Assessment Wheezing and pleural rub was heard.

Vital sings

PRF------- 98 bpm
SPO_2 ------94% or 4L of o_2
RR-------- 27/min
B.P--------110/60

Patient was also diagnosed with Acute Pulmonary edema. Diuretics were added to the treatment and we were ordered to monitor input/output Patient was referred from MICU to General Medicine for management of Breathless (Pulmonary edema).

3rd day: - the patient was again received in MICU at 5:00Pm from ward 05 (general medicine). Patient was stable, Conscious, Oriented, on O_2 inhalation. Patient was symptomatically better with no active pain. Breathlessness was improved.

Vital sing

PR------- 100bPm
B.P ------120/70
RR-------34/min
SPO----- 90% or 4L of O_2.

4th day: - The patient was Conscious, stable and well oriented. Vital Signs were checked and recorded.

PR--------98bpm
SPO-------94 on 4L
Temp------A/F
Urine output ----- Adequate
The patient has congestive heart failure with evidences of COPD

Health reduction During Hospitalization:

a) On assessing the patient, I communicated with his wife about the condition and told her about the disease her husband was suffering from.
b) I explained the symptoms of the disease and the precautions that are necessary.
c) I suggested avoiding heavy lifting and vigorous physical activity to prevent extreme increases in blood pressure which would put more pressure on the aneurysm.
d) I advised the family of the patient to avoid emotional stress to the patient which can raise the blood pressure, so I suggested avoiding conflict and stressful situations.

Summary:

60 years old male admitted in hospital with Aortic root aneurysm with sever Aortic Regurgitation. The patient has been in the MICU for the past 6 days during which that time period complete care was provided, proper medications with O_2 inhalation was given and was observed for any complications.

References

- Black's Medical surgical Nursing by Joyce M Black, Jane Hokinson Hawks Volume II
- Brunner and suddarth's Text book of Medical Surgical Nursing Volume I.
- Https//www. Mayodinic.com
- Patient and his attendant
- My Overall Assessment

****