

**Case Study**

## A patient with dilated cardiomyopathy

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### Introduction

A patient, 58yrs old was admitted in CCU of B. M. Birla Heart Research Centre on 8th April 2010 with Dilated cardiomyopathy, Left Ventricular failure, Hypertension, Left bundle branch block. He was a disciplinary manager in Indian Airlines. He was a heavy smoker 10 yrs back.

Patient had suffered from viral fever in the year 1999, having temperature of 103-105 degree F. He was treated at home and after 4 weeks patient was fit for work. In the year 2002 he had an episode of black out, was hospitalized and PPI (DDDR) was done. Presently the patient admitted in Intensive care unit with shortness of breath, decreased urine output and was planned for CRT-D.

### Definitions

**Dilated cardiomyopathy:** Cardiomyopathy constitutes a group of diseases that directly affect the structural and functional ability of the myocardium.<sup>1</sup>

**Left ventricular failure:** Inability of one or both sides of the heart to pump enough blood for the body.<sup>1</sup>

**Hypertension:** A common disorder in which blood pressure remains abnormally high (a reading of 140/90 mmHg or greater).<sup>1</sup>

**Left bundle branch block (LBBB):** in this condition activation of the left ventricle is delayed which results in the left ventricular contraction delayed than the right ventricle.<sup>1</sup>

### Etiology

ACCORDING TO BOOK	IN MY PATIENT
<b>Cardiomyopathy<sup>2</sup></b> <ul style="list-style-type: none"> <li>•Primary-Idiopathic</li> <li>•Secondary-Inflammatory               <ul style="list-style-type: none"> <li>1.Viral</li> <li>2.Bacterial</li> <li>3.Fungal</li> <li>4.Granulomatous</li> </ul> </li> <li>•Metabolic</li> <li>•Toxic</li> <li>•Infiltrative</li> <li>•Fibroplastic</li> </ul>	Viral fever in 1999
<b>Hypertension<sup>3</sup></b> <ul style="list-style-type: none"> <li>•Age</li> <li>•Alcohol</li> <li>•Cigarette smoking</li> <li>•Diabetic mellitus</li> <li>•Elevated serum levels</li> <li>•Excess dietary sodium</li> <li>•Sedentary life style</li> <li>•Socioeconomic status</li> </ul>	Patient was chain smoker, but left smoking 10 years back
<b>Heart Failure<sup>2</sup></b> <ul style="list-style-type: none"> <li>•Coronary artery disease</li> <li>•Rheumatic heart disease</li> <li>•Congenital heart disease</li> <li>•Cardiomyopathy</li> <li>•Bacterial endocarditis</li> <li>•Valvular heart disease</li> <li>•Pulmonary embolism</li> <li>•Hypertensive crisis</li> <li>•Ventricular septal defect</li> <li>•Acute myocardial infarction</li> <li>•Rupture of papillary muscles</li> </ul>	Patient is suffering from Dilated cardiomyopathy
<b>LBBB<sup>2</sup></b> <ul style="list-style-type: none"> <li>•Aortic stenosis</li> <li>•Dilated cardiomyopathy</li> </ul>	Patient is suffering from Dilated cardiomyopathy

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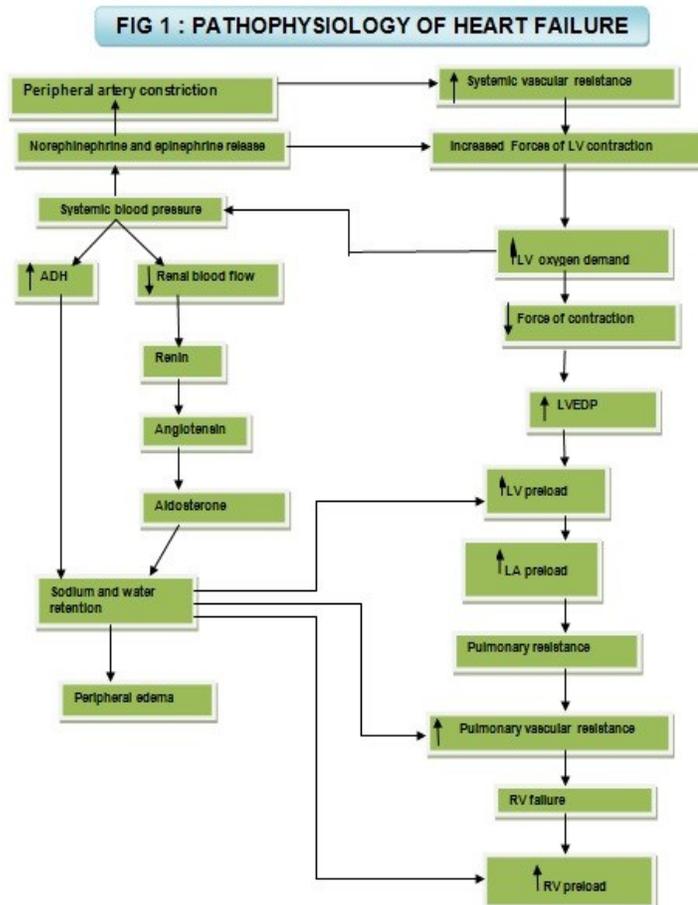
**Pathophysiology**

**Dilated cardiomyopathy** : Diffuse degeneration of myocardial fibers elongation decreases contractile function and enlargement and dilation of all four chambers. Increased pressure in all four chambers causes Increased pulmonary pressures. Leakage of fluid into the interstitial space causes Pulmonary edema ultimately leads to cardiac failure.<sup>1</sup>

**Hypertension** : Stress of constantly elevated BP increases the risk of atherosclerotic development that causes endothelial injury. Atherosclerosis in turn causes narrowing of the vessel and decreases the distensibility or elasticity of the vessel. More force required to pump blood which leads to ventricular hypertrophy and decreased stroke volume.<sup>1</sup>

**LBBB** : It is often associated with left ventricular hypertrophy and/or dilation. An incomplete LBBB has a QRS duration of less than 120 msec with some of the LBBB characteristics and usually can be a normal finding. Left anterior fascicular block and Left posterior fascicular block both have QRS duration's of less than 120 msec with left and right axis deviation respectively.<sup>1</sup>

**Heart Failure** : Figure 1 shows the pathophysiology of heart failure.



**Sign and symptoms of patients**

ACCORDING TO BOOK <sup>3</sup>	IN MY PATIENT
<p><b>Dilated Cardiomyopathy</b></p> <ul style="list-style-type: none"> <li>• Decreased exercise capacity</li> <li>• Fatigue</li> <li>• Dyspnea at rest</li> <li>• Paroxysmal nocturnal dyspnea</li> <li>• Orthopnea</li> </ul> <p><b>As disease Progresses</b></p> <ul style="list-style-type: none"> <li>• Dry cough</li> <li>• Palpitations</li> <li>• Bloating</li> <li>• Nausea</li> <li>• Vomiting</li> <li>• Anorexia</li> <li>• Abnormal S<sub>3</sub> and S<sub>4</sub> sound</li> <li>• Tachycardia or bradycardia</li> <li>• Pulmonary crackles</li> <li>• Edema</li> <li>• Weak peripheral pulse</li> <li>• Pallor</li> <li>• Hepatomegaly</li> <li>• Jugular venous distension</li> <li>• Arrhythmias</li> </ul>	<p>Decreased exercise capacity, Fatigue, nausea, vomiting, anorexia, pulmonary crackles, edema, jugular venous distension</p>
<p><b>Hypertension</b></p> <ul style="list-style-type: none"> <li>• Fatigue</li> <li>• Reduced activity tolerance</li> <li>• Dizziness</li> <li>• Palpitations</li> <li>• Angina</li> <li>• Dyspnea</li> </ul>	<p>Fatigue, reduced activity tolerance, dyspnea,</p>
<p><b>Heart failure</b></p> <ul style="list-style-type: none"> <li>• Fatigue</li> <li>• Paroxysmal nocturnal dyspnea</li> <li>• Tachycardia</li> <li>• Edema</li> <li>• Nocturia</li> <li>• Skin changes</li> <li>• Behavioural changes</li> <li>• Chest pain</li> <li>• Weight changes</li> </ul>	<p>Fatigue, edema</p>
<p><b>LBBB</b></p> <ul style="list-style-type: none"> <li>• Fainting</li> <li>• Feeling to get fainting</li> <li>• Having a slow heart rate</li> </ul>	<p>-</p>

## Investigation

ACCORDING TO BOOK	IN MY PATIENT
<b>Dilated Cardiomyopathy</b>	
<b>Physical assessment</b>	
<ul style="list-style-type: none"> <li>• S<sub>3</sub> and S<sub>4</sub> sound</li> <li>• Cardiomegaly</li> <li>• AV valve regurgitation</li> <li>• Increased JVP</li> <li>• Peripheral edema</li> </ul>	Increased JVP was present
<b>Blood</b>	
<ul style="list-style-type: none"> <li>• Increased lipoprotein</li> </ul>	Bilirubin-2.5 Albumin-3 Total protein-6 Hb-10gm/dl
<b>Chest X Ray</b>	
<ul style="list-style-type: none"> <li>• Cardiac enlargement</li> <li>• Pulmonary venous hypertension</li> <li>• Plethoric lung</li> </ul>	Cardiac enlargement and pleural effusion
<b>ECG</b>	
<ul style="list-style-type: none"> <li>• Sinus tachycardia</li> <li>• Atrial and ventricular arrhythmia</li> <li>• ST and T abnormality</li> </ul>	Patient had pacemaker with set rate 60
<b>Echo</b>	
<ul style="list-style-type: none"> <li>• Left ventricular enlargement</li> <li>• Abnormal diastole pressure</li> <li>• Mitral valve regurgitation</li> </ul>	Dilated cavity, LVEF-20%, 2+mitral regurgitation, 2+tricuspid regurgitation, PAP-45mmHg, Systolic dysfunction
<b>Cardiac catheterization</b>	
<ul style="list-style-type: none"> <li>• Left ventricular enlargement</li> <li>• Diminished cardiac output</li> </ul>	Not done
<b>Angiography</b>	
Blockage in coronary artery	Not done

## Medical Management

ACCORDING TO BOOK <sup>4</sup>	IN MY PATIENT
Treatment of underlying cause	Treatment of viral infection done before
Drug Therapy	(TabAlpresol25mg1/2 tab TDS,)
1. Nitrates	(Tab Ramipril2.5mg OD,)
2. Beta blockers	(Tab Zytanix 12.5mg1/2 tabOD,TabAldactone 25mgOD Tab
3. ACE inhibitors	Lasix 20mgOD,)
4. Diuretics	(TabCordarone 100alt day,)
5. Digitalis	(Tablanoxin0.25mg1/2tab TDS,)
6. Anticoagulants	(Inj Fragmin 2500IU OD given,) (Tab Rabeloc20 OD,)(Nebuliser was given with Duolin)

ACCORDING TO BOOK <sup>4</sup>	IN MY PATIENT
Ventricular assisting device	CRT-D prescribed
Cardiac resynchronization therapy	
Implantable cardioverter device	
Cardiac transplant	
Surgical correction	
Dynamic cardiomyoplasty	

## CRT-D

CRT-D re-coordinates the beating of the two ventricles by pacing both the ventricles simultaneously. This differs from typical pacemakers, which pace only the right ventricle. The implantable defibrillator monitors the person's heart rhythm and automatically delivers lifesaving treatment if a dangerous cardiac arrhythmia occurs.<sup>3</sup>

## Complication

Heart failure, Valve regurgitation, Edema, arrhythmia, sudden cardiac arrest, embolism are the complications usually found in these patients. In my patient except sudden cardiac arrest and embolism all the complications are present.

## Prognosis

According to book prognosis is typically poor. Patient was discharged on 22nd April 2010 with all the medications prescribed during treatment except Tab Lasix.<sup>5</sup>

## References

1. Smeltzer C S, Bare B. Textbook of Medical Surgical Nursing.10th ed. Philadelphia : Lippincott Williams & Wilkins; 2004.
2. Lewis, Heitkemper, Dirksen. O'Brien, Bucher. Medical Surgical Nursing. Assessment and Management of clinical problems. 7th ed. Elsevier : Mosby Publication; 2007.
3. Alexander W R, Schlant RC, Fuster V. The heart. 9th edition. New York : Mcgraw Hill;1994.
4. Haslett C, Chilvers ER, Bron A N, Colledge NR. Davidson, Principles and practice of Medicine. New York : Churchill Livingstone; 2002.
5. Isselbacher JK, Martin B J, Braunwald E, F S Anthony, Wilson J D, Kasper D. Harrison's Principles of Medicine.13th ed. New York : McGrawHill; 1994.