



HEALTHY HEART

VOLUME-15 | ISSUE-170 | JANUARY 05, 2024

Price : ₹ 5/-

Honorary Editor :

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Cardio Vascular & Thoracic Surgeon
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Dear Friends,

Greetings from MCIMS Hospital CVTS department.

You all are very well aware that till date we have done 5 Successful Heart Transplants at MCIMS Hospital.

I got lot of inquiries as to what are the indication, contraindication for heart transplant. Even what is the process if someone has to refer the patient for Heart Transplant. In this brief article I have tried to give you quick summary of which patients are candidates for heart transplant & once they are considered for transplant then what is further process of enrolling them in waiting list for heart transplant.

Hope this helps you in finding out right patient for transplant & you can guide them for the same.

Advanced Chronic Heart Failure and Heart Transplantation

A Guide to Clinical Decision-Making and the process for reference for Heart Transplant

Diagnosis of Advanced Chronic Heart Failure

Advanced chronic heart failure is defined as Stage D heart failure according to the latest ACC/AHA heart failure guidelines. It designates patients with refractory heart failure who might be eligible for specialized, advanced treatment strategies or cardiac transplantation, or for end-of-life care, such as hospice.

The clinical definition of advanced chronic heart failure is based on NYHA class 3 or 4 symptoms, severely impaired exercise capacity, and a history of at least 1 hospitalization due to heart failure in the past 6 months despite optimal medical therapy. Even advanced heart failure is punctuated by periods of more severe signs and symptoms followed by periods of compensation. Often, patients

with a history of functional class 4 will respond to augmented therapy with significant lessening of symptoms. Therefore, a 3-month persistence of at least NYHA III symptoms seems to be a justifiable requirement for the diagnosis of advanced chronic heart failure.

A cardiopulmonary exercise testing in the form of VO2 max--peak oxygen consumption of <14 ml/kg/min would

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Figure 1. Diagnosis of advanced chronic heart failure

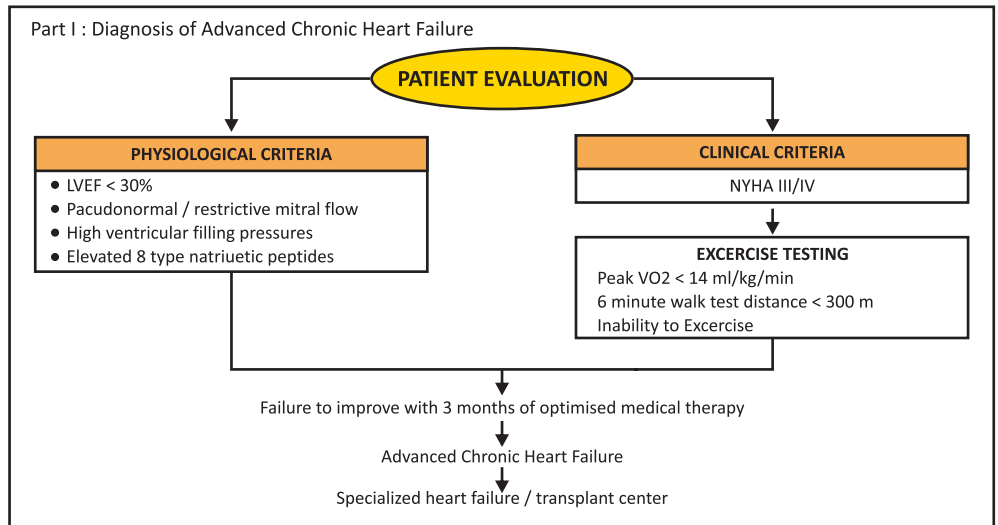


Table 5. Traditional Contraindications for Heart Transplantation

Age

- Obesity
- Insulin-dependent diabetes with end-organ damage
- Irreversible renal dysfunction
- Irreversible hepatic dysfunction
- Coexistent systemic illness with a poor prognosis
- Irreversible pulmonary arterial hypertension
- Irreversible pulmonary parenchymal disease
- Acute pulmonary parenchymal disease
- Severe peripheral and/or cerebro-vascular disease
- Irreversible renal dysfunction
- Active peptic ulcer disease
- Active diverticulosis or diverticulitis
- Active infection
- Coexisting neoplasm

● Refractory cardiogenic shock

- Documented dependence on IV inotropic support to maintain adequate organ perfusion
- Peak VO₂ less than 10 ml/kg/min with achievement of anaerobic metabolism
- Recurrent life-threatening ventricular arrhythmias refractory to all therapeutic modalities

RELATIVE

- Peak VO₂ 11 to 14 ml/kg/min (or 55% of predicted) and major limitation of the patient's daily activities
- After screening for absolute indication for Heart Transplant, assessment and screening for contraindications is done for which a battery of investigations are done.

1 hospitalization due to heart failure in the past 6 months despite optimal medical therapy. Even advanced heart failure is punctuated by periods of more severe signs and symptoms followed by periods of compensation. Often, patients with a history of functional class 4 will respond to augmented therapy with significant lessening of symptoms. Therefore, a 3-month persistence of at least NYHA III symptoms seems to be a justifiable requirement for the diagnosis of advanced chronic heart failure.

A cardiopulmonary exercise testing in the form of VO₂ max--peak oxygen consumption of <14 ml/kg/min would appear to be a reasonable diagnostic criterion for advanced heart failure, and a diagnosis of advanced heart failure would be unreasonable if peak VO₂ was >18 ml/kg/min. A simple 6 minute walk distance test of less than 300 meters is again diagnostic of Advanced Heart Failure.

Evaluation of Indications for Heart Transplantation

In a specialized centre, the evaluation of patients with advanced chronic heart failure patient is based on an integrated approach that includes the assessment of candidacy for heart transplantation and alternate treatment modalities, such as Cardiac Resynchronization Therapy (CRT) or mechanical circulatory support (LVAD).

Table 1. Indications for Heart Transplantation in Advanced Chronic Heart Failure

ABSOLUTE



This battery of investigations are as follows and estimated cost for this pre transplant evaluation will be around Rs 1,75,000/-.

Table 3. Required Pre-Transplant Studies in All Patients

History and Physical, Body weight Baseline + Q3 Months

Assessment of Heart Failure Severity

- Cardiopulmonary exercise test Baseline+Q1 Year
- Echocardiogram Baseline+Q1 Year
- Right heart catheter Baseline+Q6 Months
- Coronary angiography Baseline
- ECG Baseline+Q1 Year

Evaluation of multi-organ function

- Routine lab work (BMP, CBC, LFT) Baseline+Q3 Months
- PT/INR Baseline+Q3 Months
- Urinalysis Baseline+Q3 Months
- GFR (MDRD quadratic equation) Baseline+Q3 Months
- Urine sample for protein excretion Baseline+Q3 Months
- PFT with Arterial blood gasses Baseline
- CXR (PA and lateral) Baseline+Q1 Year
- Abdominal ultrasound Baseline
- Stool for occult blood 3x Baseline+Q1 Year
- Immunocompatibility
- ABO, Repeat ABO Baseline
- HLA tissue typing Baseline
- PRA and flow cytometry Baseline+Q2 Months
(PRA>10%, VAD, transfusion

Infectious serology and vaccination

- Hepatitis B surface Ag Baseline
- Hepatitis B surface Ab Baseline
- Hepatitis B core Ab Baseline
- Hepatitis C Ab Baseline
- HIV Baseline
- Rapid Plasma Reagin Baseline
- HSV IgG Baseline
- CMV IgG Baseline

- Toxoplasmosis IgG Baseline
- EBV IgG Baseline
- Varicella IgG Baseline
- PPD Baseline

General consultation

- Social work, Psychology Baseline
- Financial Baseline

Evaluation of multi-organ function

- Carotid Doppler and lower extremity arterial ultrasounds (history or coronary artery disease, smoking, or >50 y) Baseline
- Pulmonary Function Testing (smoking, Baseline amiodarone use)
- DEXA scan (>50 y) Baseline
- Dental examination (poor oral hygiene) Baseline+Q1 Year
- Ophthalmologic examination (diabetic) Baseline+Q1 Year

Preventive and malignancy

- Colonoscopy (men > 50 y) Baseline
- Mammography (> 40 y) Baseline+Q1 Year
- Gyn/Pap (>18 y sexually active) Baseline+Q1 Year
- PSA and digital rectal exam (men>50y) Baseline+Q1 Year





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46th | TAVI
Transcatheter Aortic
Valve Implantation

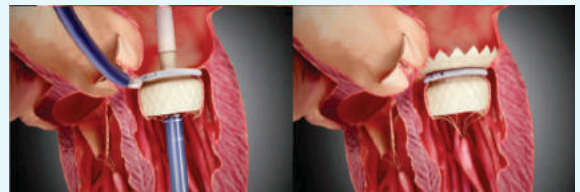


Balloon Expandable
Valve



Self Expanding
Supra-Annular Valve

04th | TMVR
Transcatheter Mitral
Valve Replacement



Balloon Expandable Valve

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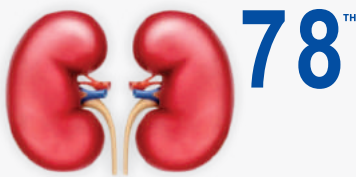
47th

HEART TRANSPLANT



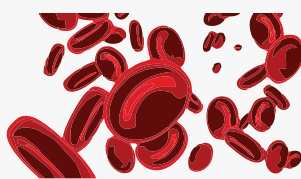
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LIVER TRANSPLANT



78th

Kidney Transplant



200+

Paediatric BMT



4th

Lung Transplant

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