

MANAGEMENT OF CARDIAC FAILURE

LVF

CCF

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Principles of LVF management

- Make the patient stable and Rx pulmonary oedema
- Confirm the diagnosis and look for underlying cause
- Long term treatment

Plan of LVF Mx

Step one Basic measures + initial treatment-IV Frusemide, Morphine, O₂
Arrange investigations

Treat the cause eg. MI- streptokinase

Step two

If no improvement, BP high or normal

- GTN infusion
- If BP low inotropes

Step three *Further treatment if no improvement with above.

Venesection, mechanical ventilation

Investigations

- **ECG**
 - **CXR (P-A)**
 - **Blood urea, serum electrolytes**
 - **FBC**
 - **Cardiac enzymes etc.**
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- **Arterial blood gas (if severe)**
 - **Echocardiogram (if available)**

A)Acute pulmonary oedema Mx (emergency)-Step one

Basic measures

- Sit upright
- High oxygen (face mask, CPAP)
- IV cannula
- Cardiac monitoring

Acute pulmonary oedema Mx ctd

- IV loop diuretics - **frusemide**
 - **IV 40,60,80 mg ect**
(vasodilatation diuresis) - **can repeat**
- IV opiates - **morphine 2.5 – 5mg**
(reduce anxiety and preload)
- Buccal or sublingual nitrates - **BP remains normal or high**
(reduce preload and after load)

Step two -If no improvement

BP – normal or high

Add

- **Glyceryl nitrates infusion – adjust the dose according to BP**

SBP- <90 mmHg

Add

■ Inotropes

Dobutamine IV infusion

Dopamine IV infusion

Step three-If no improvement with the above drug Rx

- Venesection
- Assisted ventilation
(reduces myocardial O_2 demand and improve alveolar ventilation)
- Intraventricular devices

B)R_x cause and precipitating factors

Eg. MI → streptokinase

Hypertension → antihypertensives

Mitral stenosis → valvotomy

Thyrotoxicosis → antithyroid Rx

Endocarditis → antibiotics

Arrhythmia → anti arrhythmic

C)When improved

Change to oral medication

- Frusemide
- ACE inhibitor
- β blockers
- Vasodilators
- Digoxin

in combination as
in CCF

Chronic Congestive cardiac failure

Mx Principles

1. Rx CCF
2. Treat underlying cause

Management - Treatment

- General

- Specific

 - Drugs

 - Surgery

 - Transplantation

Non-pharmacological Mx

- Diet -

- *salt restriction(2/3 g per day)

- *Fluid restriction is unnecessary unless patient develops hyponatraemia or fluid retention difficult to control with diuretics.

- Avoid Alcohol

(ctd.....)

- Rest and mobilization (Rest in unstable heart failure)
- Maintain ideal body weight
- Education
 - about illness
 - drugs –avoid drugs like NSAID/Verapamil
 - family support

Drug Management

❖ Diuretics-

to relieve fluid retention

eg:

*Frusemide

*Thiazide

*Spironolactone

Others

❖ ACE inhibitors /
Receptor blockers

❖ Beta blockers
(carvedilol)

❖ Digoxin - atrial
fibrillation

❖ Vasodilators-Nitrates /
hydralazine

❖ Inotropes

Diuretics – Reduce salt and water retention

1. Loop diuretics - Frusemide
ascending limb of loop of Henle
2. Thiazide diuretics
HCT - mild
act on DCT
3. Potassium sparing diuretics-Spironolactone

(Ctd....)

- Patients with fluid over load should also receive salt and fluid restrictions
- Addition of a thiazide / aldosterone antagonist (spiranalactone) in severe heart faliure

ACE Inhibitors

- Interrupts the vicious cycle of neurohumoral activation(RAAS)

- *Reduced conversion of Angiotensin I to Angiotensin II.

- Reduced aldosterone-Salt, water retention(Reduced preload)

- Reduced vasoconstriction(reduction in afterload)

Eg. Captopril, Enalapril

ARB Therapy

- Blocks the receptors on heart, peripheral blood vessels and kidney
 - Changes are similar to ACEI therapy
 - No cough as in ACEI- better tolerated.
- Eg. Losartan

(ctd....)

- Shown to decrease mortality , reduce hospitalisation , improves symptoms.
- First line therapy to all patients with EF less than 40% , even if asymptomatic.

Beta Blockers

- Blocks the beta receptor sympathetic stimulation(enhanced symp stimulation causes deleterious effects on heart)

eg: carvedilol

Bisoprolol

Are of value in patients with stable heart failure

- Avoid in acute heart failure

bronchial asthma

COPD

(ctd....)

- Treatment should be started at a very low dose and titrated very slowly over a period of weeks or months.

■ Digoxin

- **HF with AF** but their use in sinus rhythm is controversial
- Increase contractility
- Orally (0.125 – 0.25 mg/daily)
- Adjusted according to weight and renal function.
- Serum K levels should be monitored

Ionotropes

- Dobutamine

Stimulates β_1 , β_2 . (vasodilatation, increased heart rate, Cardiac output and diuresis.)

❑ Dopamine

Low dose- stimulates D receptors renal
dilatation → diuresis

Medium dose- β receptor stimulation
→ increased myocardial contractility
→ Increased CO

High dose- stimulate alpha
receptors(Vasoconstriction)- Improve BP

Treat possible causes

- Anaemia – blood transfusion
- Thyroxine – anti thyroid treatment
- Pericardial effusion – aspiration
- Valvular heart disease - surgery

- Refractory heart failure
(not responding to Rx)



Cardiac Resynchronization
Cardiac Transplantation

Complications

- Renal Failure
- Hypokalaemia, Hyperkalaemia
- Hyponatraemia
- Impaired Liver Function
- Thromboembolism-DVT
- Arrhythmias

Thank You