

# **CHRONIC AND ACUTE HEART FAILURE**

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# OUTLINE OF THE PRESENTATION

- **General comments/case report**
- **Definition**
- **Etiology/Pathophysiology**
- **Symptoms**
- **Diagnostic approach**
- **Management/prevention**
- **Acute heart failure**
- **Special groups**
- **Summary**

# **GENERAL RULES WHEN EVALUATING DISEASE:**

- **Definition**
- **Importance/prevalence/incidence**
  - **Pathophysiology**
- **Strategy of examination – diff. dg.**
- **Solution: admission to ICU, hospital, referral, out-patient management, ...**
  - **Pitfalls – special groups (elderly, obese, ...)**

# DEFINITION OF HF:

- The heart is not able to sustain function of peripheral tissues
- Clinical syndrome characterized by typical symptoms (e.g. breathlessness, ankle swelling and fatigue) that may be accompanied by signs (e.g. elevated jugular venous pressure, pulmonary crackles and peripheral edema) caused by a structural and/or functional cardiac abnormality, resulting in a reduced cardiac output and/or elevated intracardiac pressures at rest or during stress.
- Prevalence 1-2% in general population, >10 % individuals older 70 years  
Incidence 1–3/1 000
- Mortality: 10–15 %/year, 50 %/5 years

# **DEFINITION(s):**

- **Stabile HF – treated patients with symptoms and signs stable/unchanged for at least 1 month**
- **Decompensated HF (sudden/stepwise) deterioration of chronic HF ‘de novo’**
- **First manifestation of HF - sudden onset (mechanical complications of AMI) or gradual onset (Dilation cardiomyopathy)**

# **DEFINITION(s):**

- **Chronic x acute**
- **Left x right**
- **HFrEF x HRpEF**
- **Forward x backward**

...

# ETIOLOGY:

## MYOCARDIAL INJURY:

ISCHEMIC HEART DISEASE/CARDIOMYOPATHY (ATHEROSCLEROTIC ARTERY DISEASE)

VIRAL MYOCARDITIS

CHEMOTHERAPEUTICS (ADRIAMYCIN, ...)

ABUSE (ALCOHOL, COCAINE)

## PRESSURE OVERLOAD:

HYPERTENSION,

AORTIC VALVE STENOSIS

## VOLUME OVERLOAD:

(AORTIC/MITRAL) VALVE INSUFFICIENCY

## INFILTRATIVE DISEASES:

AMYLOIDOSIS, HEMOCHROMATOSIS, FABRY DISEASE

## CHRONIC TACHY/BRADYARRHYTHMIA

## OTHER:

CARDIOMYOPATHY, RADIOTHERAPY, SHUNTS (PAGET DISEASE )...

# **SYMPTOMS + SIGNS:**

## **SYMPTOMS AND SIGNS (NON-SPECIFIC)**

- **FORWARD HF – FATIGUE, SYNCOPES, WEIGHT LOSS, ...**
  - **BACKWARD HF – DYSPNEA, EDEMA OF LOWER EXTREMITIES,**
- + NOCTURNAL DYSPNEA, NYCTURIA, ...**

# DISCRIMINATING FEATURES IN THE HISTORY AND PHYSICAL EXAMINATION OF A PATIENT WITH SHORTNESS OF BREATH

	CONGESTIVE HEART FAILURE	PULMONARY EMBOLISM AND INFARCTION	PNEUMONIA	ASTHMA/COPD
<b>HISTORY</b>				
<b>Onset</b>	Gradual	Sudden	Gradual	Gradual
<b>Other</b>	Orthopnea	Risk Factors of TE ...	Cough, Fever, Sputum production	Previous history ...
<b>PHYSICAL EXAMINATION</b>				
<b>Temperature</b>	Normal	Normal or slightly elevated	High	Normal
<b>JVP</b>	Elevated	Elevated or normal	Normal	Normal
<b>Respiratory</b>				
<b>Crackles</b>	Bibasal	Unilateral	Unilateral	No
<b>Wheezes</b>	±	±	±	Present
<b>Friction rub</b>	No	±	±	No

# DIAGNOSTIC TESTS

- ECG
  - ECHOCARDIOGRAPHY
  - NATRIURETIC PEPTIDES
- + DETECT UNDERLYING CAUSE (??? ...)

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- ECG
  - ECHOCARDIOGRAPHY
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- + DETECT UNDERLYING CAUSE (CORONAROGRAPHY, ...)

# MANAGEMENT:

- **LIFESTYLE**
- **PHARMACOTHERAPY**
- **INSTRUMENTAL THERAPY**
- **+ REMOVE UNDERLYING CONDITION (TREAT HYPERTENSION, CORRECTION OF CORONARY OBSTRUCTION, VALVE ABNORMALITIES, ...)**

# **LIFESTYLE:**

- **DIET**
- **PHYSICAL ACTIVITY**
- **OTHER**

# **LIFESTYLE:**

- **DIET (DECREASE SALT INTAKE, FLUIDS IN GENERAL LESS RESTRICTED)**
- **PHYSICAL ACTIVITY (DIMINISHED, BUT MODERAT STILL IMPORTANT)**
- **OTHER (REDUCE ALCOHOL INTAKE, ANTIATHEROGENIC DIET, ...)**

# PHARMACOTHERAPY:

- DECREASE HEART WORK/OXYGEN CONSUMPTION  
(AFTERLOAD)
- DECREASE CIRCULATING VOLUME (*PRELOAD?*)

WHICH LAWS IN PROCESS ?

# PHARMACOTHERAPY:

- **DECREASE HEART WORK/OXYGEN CONSUMPTION  
(AFTERLOAD)**
- **DECREASE CIRCULATING VOLUME (*PRELOAD?*)**

**Frank Starling x LaPlace**

# PHARMACOTHERAPY:

- VASODILATORS
- BETA BLOCKERS
- SPIRONOLACTON
- DIURETICS
- DIGOXIN
- OTHER (NEPRYLISIN INHIBITORS, SA NODE MODIFIERS  $I_f$  channel blockers...)

# TYPES OF ACUTE HEART FAILURE:

- DE NOVO
- SUPERIMPOSED ON CHRONIC HF – TRIGGERING FACTOR PRESENT
- SUPERIMPOSED ON CHRONIC HF – TRIGGERING FACTOR ABSENT

# **ACUTE HEART FAILURE DE NOVO:**

- **COMPLICATIONS OF ACUTE ISCHEMIA (MYOCARDIAL INFARCTION):**

**FAILURE OF LEFT VENTRICLE AS A PUMP**

**RUPTURE OF PAPILLARY MUSCLE(S) – ACUTE MITRAL INSUFICIENCY**

**RUPTURE OF THE INTERVENTRICULAR SEPTUM**

**(RUPTURE OF FREE WALL – SUDDEN DEATH)**

# **ACUTE HEART FAILURE DE NOVO:**

- **SUDDEN LEFT VENTRICULAR FAILURE WITHOUT ISCHEMIA**

**ACUTE MYOCARDITIS**

**SUDDEN RUPTURE OF AORTIC VALVE (ACUTE ENDOCARDITIS, ...)**

**SUDDEN ELEVATION OF BLOOD PRESSURE**

**MASSIVE PULMONARY EMBOLUS**

**ACUTE HF SUPERIMPOSED ON CHRONIC HF + NO  
TRIGGERS**

**GRAVE PROGNOSIS**

# MANAGEMENT:

~~• LIFESTYLE~~

• PHARMACOTHERAPY

• INSTRUMENTAL THERAPY

# MANAGEMENT:

- REMOVE TRIGGERING FACTOR (REVASCULARIZATION PROCEDURES, TREAT ARRHYTHMIA, HYPERTENSION INFECTION ... )
- PHARMACOTHERAPY: LOOP DIURETICS/CATECHOLAMINES/...
- INSTRUMENTAL THERAPY

# **SPECIFIC GROUPS**

- **ELDERLY/POLYMORBID INDIVIDUALS**
- **OBESE INDIVIDUALS**
- **INDIVIDUALS WITH CHRONIC LUNG DISEASE**
- **+ DIASTOLIC DYSFUNCTION (PRESERVED SYSTOLIC FUNCTION BUT DYSPNEA, HIGHER BNP, ... )**

# SUMMARY

- **HEART FAILURE VERY COMMON + SERIOUS CONDITION**
- **DETECTABLE AND TREATABLE**
- **HISTORY: DYSPNEA/EDEMA**
- **PHYSICAL EXAMINATION: NECK, LUNGS, HEART, ABDOMEN,  
LOWERE EXTREMITIES**
- **TESTS: ECHOCARDIOGRAFY, NATRIURETIC PEPTIDES**
- **MANAGEMENT: LIFESTYLE, VASODILATION, BETA-BLOCKADE,  
ALDOSTERONE ANTAGONISTS, DIURETICS, ...**