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PRACTICAL MANUAL IN CLINICAL MEDICINE



ABM Abdullah

Foreword
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❖ Takayasu's disease
❖ Pacemaker
❖ Pulmonary hypertension
❖ Cardiac arrest
❖ Marfan's syndrome

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COMMON SYMPTOMS OF CVS

- Chest pain (usually central, retrosternal).
- Palpitation.
- Breathlessness or dyspnoea.
- Others—leg swelling (in CCF), syncopal attack (in aortic stenosis, HOCM, arrhythmia, hypotension), cough (in pulmonary oedema), haemoptysis (in pulmonary hypertension).

Causes of Central or Retrosternal Chest Pain

- Cardiac—
  - Acute myocardial infarction.
  - Angina pectoris.
  - Pericarditis
  - Myocarditis.
  - Dissecting aortic aneurysm.
- Others—
  - Spontaneous pneumothorax.
  - Pulmonary embolism.
  - Reflux oesophagitis.
  - Oesophageal tear (Mallory Weis syndrome).
  - Mediastinitis.
  - Tracheitis.
  - Functional.

Palpitation

It is the feeling of rapid heartbeat. Any cause of tachycardia is associated with palpitation (see in arrhythmia).

Dyspnoea

It means difficulty in breathing or subjective awareness of breathing. Cardiac causes of dyspnoea—

- Acute left ventricular failure.
- Any vulvular heart disease like MS, MR, AS, AR, etc.
- CCF.

Types of Dyspnoea

- Dyspnoea on exertion—mild, moderate, severe.
- Paroxysomal nocturnal dyspnea (PND)—it is the difficulty in breathing in which patient wakes up from sleep at late hours of night, relieved by sitting on bed or standing, taking air by going near the windows. It indicates pulmonary oedema (in LVF, mitral stenosis).
- Orthopnoea—It means dyspnoea during lying flat or recumbent position. It indicates pulmonary oedema (LVF, Mitral stenosis).

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VALVULAR HEART DISEASES

Any valve narrowing called stenosis or unable to close called regurtitation. The most common cause of valvular heart disease is rheumatic heart disease.

MITRAL STENOSIS (MS)

Normal area of mitral valve is 4–6 cm^2.

Cause

The most common cause is chronic rheumatic heart disease. Rarely congenital.

Symptoms

- Breathlessness, usually on exertion.
- Palpitation.
- Cough, may be haemoptysis.
- Weakness.

Signs

- Pulse—low volume (in severe stenosis).
- JVP—normal but raised in pulmonary hypertension.

Precordium

- Inspection: Visible cardiac impulse in mitral area.
- Palpation:
  - Tapping apex beat.
  - Diastolic apical thrill.
- Auscultation:
  - 1st heart sound—loud in all the areas, more in mitral area.
  - 2nd heart sound—normal in all the areas.
  - Mid-diastolic murmur (MDM) in mitral area, which is low-pitched, localized, rough, rumbling (LLRR), best heard with the bell of stethoscope, in left lateral position with breathing hold after expiration, with presystolic accentuation.
  - Opening snap, just medial to the mitral area.
- Investigations
  - X-ray chest P/A view—shows straightening of left border of heart, double border on the right side.
  - ECG—'P' is bifid called P mitrale. Later on, there may be right ventricular hypertrophy(RVH), right atrial hypertrophy (RAH), atrial fibrillation(AF).
  - Echocardiogram (preferably colour Doppler).
  - Cardiac catheter may be done in some cases.

Complications

- Atrial fibrillation.
- Pulmonary oedema.

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- Pulmonary hypertension leading to CCF.
- Left atrial thrombus with systemic embolism.
- Pulmonary congestion, embolism, infarction.
- Ortner's syndrome (enlarged left atrium gives pressure on left recurrent laryngeal nerve, causing hoarseness of voice).
- Dysphagia due to enlarged left atrium.
- Recurrent bronchopulmonary infection.
- Very rarely—infective endocarditis.

Signs of Pulmonary Hypertension (PHTN)

- Palpable P2.
- Prominent 'a' wave in JVP.
- Left parasternal heave (indicates RVH).
- Epigastric pulsation (indicates RVH).
- Loud P2 on auscultation.
- Early diastolic murmur (Graham Steel murmur due to pulmonary regurgitation).
- Signs of Severe MS.

Severe when Mitral Valve Area is <1 cm^2

- Pulse—low volume.
- 1st heart sound—soft.
- Opening snap—nearer to the 2nd sound.
- MDM—prolonged.
- Evidence of pulmonary hypertension and pulmonary oedema.

Treatment

- Medical
  - Restriction of activity.
  - Low dose diuretic—thiazide or frusemide.
  - Anticoagulant (e.g. warfarin) to reduce the risk of embolism.
  - If atrial fibrillation—digoxin, beta-blocker, rate limiting calcium antagonist (e.g. verapamil, diltiazem).
  - If there is CCF—diuretic, digoxin.
- Surgical—when indicated.

Surgical Options

- Valvotomy (CMC—closed mitral commissurotomy, OMC—open mitral commissurotomy).
- Valvuloplasty (percutaneous balloon mitral valvuloplasty)- treatment of choice.
- Valve replacement.

Indications of Surgery

- Symptomatic moderate or severe MS.
- Moderate or severe MS with moderate or severe MR.
- Recurrent thromboembolism.

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- Episodes of pulmonary oedema without precipitating cause.
- Associated atrial fibrillation which does not respond to medical therapy.
- Pulmonary hypertension or recurrent haemoptysis.
- Occasionally in pregnancy, with pulmonary oedema (surgery may be done in second trimester as blood volume increases significantly with increased pulmonary pressure).

Indications of Valve Replacement

- Associated MR.
- If the valve is calcified and rigid.
- Thrombus in left atrium despite anticoagulation.

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MYXOMA OF HEART

Definition

It is the common primary tumour of heart, usually benign, may be pedunculated, polypoid, gelatinous, attached by a pedicle to the atrial septum. It may be sporadic and familial. It occurs in any age (third to sixth decade), and any sex (more in females).

Sites of Origin

- Left atrium (75%), near the fossa ovalis or its margin.
- Right atrium, rarely from ventricles.

Clinical Features

There are 3 groups of manifestations—

- Obstructive features like MS, signs vary with posture. Occasionally, there is a low-pitched sound called tumour plop. There may be syncope or vertigo.
- Embolic features either systemic or pulmonary embolism.
- Constitutional features like fever, malaise, weakness, loss of weight, myalgia, arthralgia, clubbing, skin rash, Raynaud's phenomenon.

Investigations

- CBC—anaemia, leucocytosis, polycythaemia, high ESR, thrombocytopaenia or thrombocytosis.
- Hypergammaglobulinaemia.
- Chest X-ray (may be similar to MS).
- Echocardiogram—2D or transoesophageal.
- CT scan or MRI may be done.

Treatment

Surgical excision. Recurrence may occur.

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MITRAL REGURGITATION (MR)

Causes

- Chronic rheumatic heart disease.
- Mitral valve prolapse.
- Papillary muscle dysfunction.
- Infective endocarditis.
- Trauma or mitral valvotomy.
- Connective tissue diseases (rheumatoid arthritis, SLE, Marfan's syndrome, Ehler-Danlos syndrome).
- Ankylosing spondylitis.
- Cardiomyopathy.
- Secondary to left ventricular dilatation (hypertension, aortic valve disease).

Symptoms

- Breathlessness on exertion.
- Palpitation.
- Cough.
- Weakness.

Signs

Precordium

- Inspection:
  - Visible cardiac impulse in mitral area.
- Palpation:
  - Apex beat is shifted, diffuse, thrusting in character.
  - Systolic thrill in mitral area.
- Auscultation:
  - 1st heart sound—soft in mitral area, normal in other areas.
  - 2nd sound—normal in all the areas.
- Pansystolic murmur in mitral area, which radiates to the left axilla.

Investigations

- X-ray chest P/A view (cardiomegaly may be found).
- ECG (LVH, LAH).
- Echocardiogram, preferably colour doppler.
- Cardiac catheterization may be needed in some cases.

Complications

- Acute LVF.
- Infective endocarditis.
- Embolism.
- Arrhythmia (atrial fibrillation, ectopics).
- CCF.

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Treatment

- In mild to moderate case—
  - Diuretic—frusemide or thiazide.
  - Vasodilator—ACE inhibitor.
  - If fast AF—digoxin.
  - Anticoagulant if associated AF or history of pulmonary embolism.
  - Prophylactic penicillin to prevent endocarditis.
  - Follow-up every 6 months by echocardiogram.
  - If ejection fraction falls to 55% and left ventricular dilatation > 60 mm, valve replacement may be considered.
- In severe MR—replacement of valve.

Indications of Surgery in MR

- Symptomatic MR.
- Asymptomatic patient with severe MR with mild to moderate LV dysfunction or pulmonary hypertension.

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MITRAL VALVE PROLAPSE (MVP)

Also called Barlow's syndrome or floppy mitral valve. In this condition, a mitral valve leaflet, commonly the posterior leaflet prolapses into the left atrium during ventricular systole. It is one of the most common causes of MR. It may be congenital or due to degenerative myxomatous change.

Symptoms

- More common in thin, young women, may be familial.
- The most common symptom is atypical chest pain, usually in left submammary region, stabbing in quality, may be confused with anginal pain.
- There may be palpitation, dyspnoea, fatigue.

Signs

- Midsystolic click followed by late systolic murmur (cardinal sign).
- Later, signs of MR are found.

Investigation

- Echocardiogram.

Treatment

- If asymptomatic—reassurance, periodic echocardiography.
- Atypical chest pain and palpitation—beta-blocker.
- Significant MR or AF—anticoagulation to prevent thromboembolism (aspirin may be given).
- In severe MR—mitral valve repair or replacement.
- Prophylactic penicillin to prevent infective endocarditis.

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TRICUSPID REGURGITATION (TR)

Causes

- Functional—secondary to pulmonary hypertension, cor pulmonale, right heart failure (commonest cause).
- Chronic rheumatic heart disease.
- Infective endocarditis (commonly involved in drug addicts).
- Congenital heart disease (e.g. Ebstein's anomaly).
- Carcinoid syndrome.
- Right ventricular papillary muscle infarction, trauma or steering wheel injury in chest.

Symptoms

- May be asymptomatic. Symptoms of primary disease.

Signs

- Pulse—normal in volume, rhythm and character.
- JVP—raised, giant 'V' wave, oscillating upto ear lobule.

Precordium

- On palpation:
  - Left parasternal lift and epigastric pulsation (due to RVH).
- On auscultation:
  - First heart sound—soft in tricuspid area, normal in other areas.
  - Second sound—normal in all the areas.
  - Pan systolic murmur (PSM) in left lower parasternal area with no radiation, louder with inspiration.
- Others:
  - Liver—enlarged, tender and pulsatile.
  - Occasionally ascites, oedema and pleural effusion may occur in TR.

Cardinal Findings in TR

- Prominent 'V' wave in JVP.
- Pansystolic murmur (PSM) in left lower parasternal area, louder with inspiration and reduced on expiration.
- Liver—enlarged, tender and pulsatile (Table 1).

Table 1
Differences between MR and TR

MR	*TR*
1. PSM in mitral area	PSM in left lower parasternal area
2. PSM radiate to left axilla	No radiation
3. Murmur increases with expiration	Murmur increases with inspiration
4. No pulsatile liver	Pulsatile liver
5. No V-wave in JVP	V-wave in JVP

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Investigations

- Chest X-ray—heart may be enlarged.
- ECG.
- Echocardiogram, preferably colour Doppler.

Complications

- Right-sided heart failure.
- Infective endocarditis.

Treatment

- Treatment of primary cause.
- In severe organic TR—operative repair. Occasionally, valve replacement is needed.
- Ebstein's anomaly: It is a congenital heart disease associated with downward displacement of tricuspid valve into the right ventricle. Hence, right atrium is large and right ventricle is small. Characteristically, multiple clicks occur due to asynchronous closure of tricuspid valve. ASD is commonly associated with this anomaly.

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