

PHARMACOLOGICAL PROBLEMS

1. A 69 year old woman suffering from CHF has been treated with .25 mg Digoxin tablet daily for last 3 months. But the heart failure is not controlled adequately. What will be the treatment to control the heart failure adequately?

The treatment will be as follows,

- 1) **DIURETIC:**
 - a. I.v furosemide (40-80 mg, 6 hourly) followed by,
 - b. oral furosemide (40 mg, 3-4 times/ day)
- 2) **ACE INHIBITORS:**
 - a. Start with low dose, after stopping diuretic for 1-2 days. If there is no hypotension, then increase the dose depending on the response.
 - b. Enalapril (2.5 mg BD, maximum- 10 mg BD).
- 3) **ANGIOTENSIN RECEPTOR BLOCKERS:**
 - a. Losartan (25 mg OD, maximum- 100 mg OD)
- 4) **Dietary sodium restriction** (2-3 gm/day)
- 5) **Physical rest** (Only in decompensated patients)
- 6) **β blockers: (only after acute decompensated state is over, start with low dose)**
 - a. Metoprolol (12.5-25 mg OD, Maximum-100 mg OD)/
 - b. Carvedilol (3.125 mg BD, Maximum-10 mg OD)/
 - c. Nebivolol (1.25 mg OD, Maximum- 10 mg OD).
- 7) **Aldosterone receptor antagonist:**
 - a. Spironolactone (12.5 mg OD, Maximum 50 mg OD)
- 8) **Potassium level monitoring** (normal= 3.5-5.0 mmol/L)
- 9) **Continue digoxin.**

2. A 16 year old girl is admitted to the ED with shortness of breath. She is diagnosed as a case of acute asthma. She has been using MDI of Salbutamol, Ipratropium and Beclomethasone. In spite of the above treatment, the present attack is not controlled. What should be the immediate treatment?

The immediate treatment will be as follows,

- 1) **Moist oxygen inhalation:** 1-2 L/ min to maintain arterial oxygen saturation > 90%.
- 2) **Nebulisation with salbutamol** (2.5 mg) and **Ipratropium** (.5 mg), to be repeated after 20 minutes.
- 3) **i.v hydrocortisone** (200 mg STAT, followed by 100 mg 8 hourly)

Note-

Step up and step down of therapy-

<u>Step</u>	<u>Group of drug</u>	<u>Name of drug</u>	<u>Dosage</u>
<u>Step 1 (Mild episodic asthma, symptoms <1 daily)</u>	<u>Short acting β_2 agonist</u>	<u>Salbutamol, Terbutaline</u>	<u>Intermittent use</u>
<u>Step 2 (Mild chronic asthma, occurs 1/ day or so)</u>	<u>Low dose inhaled steroid</u>	<u>Budesonide</u>	<u>200-400 μg daily.</u>
<u>Step 3 (Moderate asthma, occurs > 1/ day)</u>	<ol style="list-style-type: none"> 1. <u>Long acting β_2 agonist + Low dose steroid or,</u> 2. <u>Long acting β_2 agonist/ Medium dose steroid</u> 	<u>Budesonide</u>	<u>400-800 μg daily.</u>
	<u>High dose steroid</u>	<u>Budesonide</u>	<u>800-2000 μg</u>

Step 4 (Severe asthma, frequent exacerbations) + Long acting β 2 agonist daily.

Step 5 Daily oral corticosteroid + Initial drugs of other steps

3. A 45 year old male patient with history of smoking, presented with exertional retrosternal compressing pain, radiating to the left arm and lasts for 2-5 minutes. The pain is relieved after taking rest. After proper investigations, he has been diagnosed as a case of stable angina pectoris. What will be the treatment to control the attacks?

The treatment to control the attack will be-

Advice- Stop smoking and fat restriction.

To treat the episodes of acute attack of angina-

- a. **GTN/ NITROPRUSSIDE** (.5 mg sublingually)
- b. Can be repeated every 5 minutes, with a maximum of 3 such doses (**ISOSORBIDE DINITRATE**- 5 mg sublingually)

Prophylaxis:

1. Nitrates:

- a. Nitroglycerine
- b. Isosorbide dinitrate
- c. Isosorbide mononitrate

2. Antiplatelet therapy:

- a. Low dose aspirin (75-160 mg)
- b. Low dose clopidogrel (75 mg)

3. β blockers:

- a. Metoprolol- 50-200 mg OD

b. Atenolol/ Nebivolol/ Bisoprolol- 5 mg OD

4. ACE Inhibitors:

Ramipril (2.5-5 mg OD)

5. Statin therapy:

a. Atorvastatin (10 mg)

b. Rosovastatin (5 mg)

Note: If patient has also bronchial asthma, give **Amlodipine (5-10 mg)/ Diltizem (60- 120 mg)**

4. A 45 year old patient suffering from angina pectoris was on treatment with Isosorbide dinitrate. He is admitted to the hospital with severe chest pain and sweating and was diagnosed to be a case of AMI. What will the management of the case?

1) Oxygen inhalation (2-4 L/min if patient is hypoxic)

2) i.v Morphine (2-4 mg can be given every 5-30 min till relief of symptoms is achieved, **if Systolic BP <100 mm Hg, then stop morphine**)

3) i.v Metoclopramide (25 mg STAT, to avoid morphine induced vomiting)

4) Nitroglycerine (.5 mg sublingually, to be repeated after 5 min, 3 such doses, till relief of symptoms)

5) i.v Nitroglycerine (5-10 µg/ kg/ min), if **pain is not relieved by sublingual spray.**

6) Loading dose of aspirin (325 mg to be chewed, followed by, 75-160 mg of aspirin to continue).

Or,

Loading dose of clopidogrel (300 mg, followed by 75 mg to continue).

7) i.v Metoprolol (5 mg, to be repeated after 5-10 min, maximum 3 such doses), **followed by oral Metoprolol** (50-100 mg BD, 30 min after last dose of i.v metoprolol), **if the condition is BP< 90/60, HR< 60/ min, PR Interval > .24 sec)**

5. A patient with chronic psychiatric illness was treated with Chlorpromazine for a prolonged period. He developed tremor, bradycardia and rigidity. What should be the treatment without stopping the drug?

The treatment will be as follows,

Trihexyphenidyl hydrochloride tablets (2-12 mg/ day in 2-3 divided doses). The drug is started at low doses and the dose is gradually increased.

(*Note- It is an anticholinergic drug)

6. An overweight middle aged man is found to be hypertensive while attending a clinic for medical check up. His BP is 170/105 mm of Hg on two successive occasions. What will be the treatment of this patient?

The treatment will be as follows-

a. **GENERAL MEASURES:**

1. Moderate salt restriction (upto 5 gm/day)
2. Physical exercise
3. Dietary restriction of carbohydrate and fat.
4. Weight reduction (BMI<25)
5. Stoppage of smoking and alcohol.

b. **Drugs:**

1. **Hydrochlorothiazide tablet** (25 mg daily)/
2. **Atenolol** (50-100 mg daily)/
3. **Amlodipine** (5-10 mg daily)/
4. **If there is no response to a drug, it may be continued with another drug.**

7. Treatment of severe hypertension (in ICU):

- 1) **Sodium nitroprusside injection.** (It is diluted with 5% dextrose solution and then administered by controlled continuous infusion at a rate of **.5-1.5 µg/kg/min** until BP is restored, that is 30% reduction of pre-treatment diastolic pressure, **but not below 95 mm Hg in first 48 hours**)
- 2) **Furosemide injection (20-40 mg i.v) may be added to speed up the antihypertensive action.**

8. A 25 year old lady is brought to emergency unit by her family members. She is unconscious with constricted pupils and froth coming out of her mouth. She is reported to consume an organophosphate insecticide. How will you manage the case?

The management of the case will be as follows-

A. GENERAL MEASURES:

- 1) Removal of contaminated clothings.
- 2) Maintenance of airways by aspiration of secretions and artificial respiration, if required.
- 3) i.v. fluid (5% dextrose solution)
- 4) **Diazepam injection** 10 mg i.v if there is convulsion.

B. SPECIFIC TREATMENT:

- 1) **Atropine sulphate injection** (2-4 mg i.v and repeated every 10 min until muscarinic symptoms and signs disappear- **reduction of salivary and tracheobronchial secretion, rise in pulse rate, dilation of pupils**)
- 2) **Pralidoxime chloride injection** (1-2 gram i.v slowly over 5-10 min. Dose may be repeated after 1 hour, if muscle weakness persists. **(Maximum dose is upto 12 gram in first 24 hours.)**)
- 3) The patient has to be observed for 72 hours and according to the condition, atropine and PAM have to be repeated.

9. A middle aged person was watching TV in dark, suddenly develops severe pain in right eye, vomiting and blurring of vision. On examination, right pupil is dilated, sluggishly reacting to light with raised IOP. The condition is diagnosed as **acute congestive glaucoma**. How will you manage the case?

The management will be as follows,

The definitive treatment of choice is laser iridotomy or trabeculotomy.

Before surgical procedure, IOP should be reduced by drug therapy-

- 1) **Acetazolamide injection** (500 mg i.v followed by 250 mg 4 times daily)
- 2) **Mannitol** (20% i.v infusion, 1.5-2 gm/ kg over a period of 30-60 mins).
- 3) **Pilocarpine nitrate** (2%, 2 drops to be instilled in right eye every 10 mins for 1 hour and then at 30 mins interval till desired IOP is achieved).
- 4) **Timolol** (.25-.5% solution- 2 drops to be instilled in right eye 6 hourly).