Introduction

•The function efficiency of the respiratory system depends on its ability to oxygenate blood and remove carbon dioxide from the blood in the respiratory circulation.

•Interference with these functions can occur in a number of ways but the final defect in all instances is lack of adequate oxygen supply to the tissues. The anoxia of respiratory insufficiencyis responsible for most

of the clinical signs of respiratory diseases and respiratory failure.

Principles of respiratory insufficiency:

[1] Anoxia:

It is a failure of the tissue to receive adequate oxygen. In certain pulmonary diseases, gaseous exchange between oxygen and carbon dioxide is impaired. This results lead to increase of depth of the respiratory movements and an increase in heart rate and stroke

volume.

Types of anoxia:

(1) Anoxic anoxia: It occurs when there is defective oxygenation of blood in the pulmonary circulation due to respiratory diseases, such as pneumonia, pneumothorax, pulmonary edema and pulmonary congestion.

(2) Anemic anoxia: It occurs when oxygen capacity of the blood is reduced in cases of anaemia due to blood parasites, copper poisoning and nitrite poisoning, etc.

(3) Stagnant anoxia: It occurs due to decrease the rate of blood in the capillaries in case of CHF, peripheral circulatory faulty and local venous obstruction.

(4) Histotoxic anoxia: It occurs due to failure of tissue oxidation system in cases of cyanide poisoning only. It inhibits cytochrome oxidase so inhibit tissue oxidation.

[2] Respiratory failure:

Normal respiratory movements are involuntary and stimulated by respiratory centers in medulla oblongata (MO) as well as pH, 02 and C0 2 tensions of the cranial arterial blood supply. Respiratory failure is the terminal stage of respiratory insufficiency in which the activity of the

respiratory centers diminishes to the point where movements of respiratory muscles ceases.

[3] Hypercapnia

•It is the retention of C02 in blood and tissues due to faulty in

elimination of C02 during respiratory insufficiency, which stimulate respiratory center in MO.

General manifestations of respiratory insufficiency:

It may be includes:

(1) Respiratory noises:

1)Cough: It is a sudden expulsion of air proceeded by deep inspiration. It is caused by irritation of the respiratory mucosa of the air passages by inhalation of foreign body or dust. It indicates the presence of disease in the respiratory system. Cough is classified into:

1- Acute cough: symptom in many cases of respiratory disease as acute laryngitis, acute bronchitis, acute lobar and lobular pneumonia.

2- Chronic cough: Symptom in chronic bronchitis, chronic alveolar emphysema.

2) Sneezing: It occurs due to irritation of nasal mucosa as in rhinitis.

3) Snorting: It is a forceful expulsion of air through the nostrils due to pharyngeal obstruction or compression, which occurs in many types of painful and laboured breathing.

(2) Nasal discharge:•Abnormal nasal discharge is usually an indication of diseases of respiratory tract. Nasal discharge may be watery, mucoid, mucopurrulant or purulent according to it condition. It may be unilateral or bilateral.

(3) Dyspnea:

It is difficult in breathing and may be:

1) Physiologically after hard exercises.

2) Pathologically arise from anoxia and hypercapnia due to diseases of

respiratory tract as in case of bronchitis, pneumonia, laryngitis and pleurisy.

(4) Fever: In cases of bronchitis, bronchopneumonia and pleurisy.

(5) Changes in respiratory

movements:It may be:

1) Wholly costal: It occurs in ruminants in cases of tympany and impaction.

2) Wholly abdominal in cases of pneumonia and pleurisy.

3) Double expiratory movement in case of chronic alveolar emphysema.

(6) Cynosis:

It is a bluish discoloration of the skin, mucous membrane, caused by severe reduced hemoglobin in the blood, or incomplete oxygenation of hemoglobin. It occurs in respiratory diseases.

(7) Abnormal respiratory sounds: By percussion and auscultation.

Principles of treatment of respiratory tract diseases:

(1)Cough sedative for painful dry cough e.g. opium derivatives (codine 1-2 mg/Kg 3-4 times) per os daily for non ruminants.

(2) Bronchodilator: It improves ventilation and tends to correct 0 2 exchange e.g. aminophylline or cidophylline or theophylline (10 mI/50Kg BW, IV, daily).

(3) Mucolytic for liquefying the thick secretion e.g. Mucosal.

(4) Expectorants: It depends on type of cough and exudates present.

1)Sedative expectorants when cough is painful and exhausting and the secretion is thick (tenacious), e.g.ammonium and potassium salts. They stimulate secretion of mucus and reduce cough.

2) Stimulant expectorant when cough is soft and a big amount o f exudates is present (as in chronic bronchitis) e.g. creosote or turpentine

(Steam). These drugs cause slight irritation and hyperemia o f the respiratory mucosa.

3) Anodyne expectorants when cough is exhaustive e.g. morphin,

belladona or codine.

NB: Bisolvone is bronchial mucolytic but Trisolvone is mucolytic,

bronchodilator and expectorant (Syrup or capsules or solution 1 amp

1M daily/ 50 KgBW).

(5) Respiratory stimulants: e.g. a mixture o f 0 2 containing 5-10% C02 ; Also Coramine or coracid are other common respiratory stimulant.

(6) Respiratory antiseptic (antibacterial drugs): according to type of micro-organism(s) and sensitivity test.

(7) Anti-inflammatory drugs e.g. Dexamethasone IM or IV 10-20ml/cow,horse; l-10ml/dog, sheep, calf / daily till recovery.

(8) Supportive treatment: Such as vitamin C, A, glucose 5- 25% and heart tonic.

(9) Respiratory anthelmintic: Ivermectine 1 ml/50 KgBW/cow, SC