Introduction

Patients with chronic obstructive pulmonary disease suffer from airflow obstruction with limitation of their expiratory flow. Such condition may be complicated with acute exacerbation causing acute respiratory failure, which is multifactorial; but the most important causes are acute respiratory tract infection, high dose of sedative drugs.

Acute exacerbation of chronic obstructive pulmonary disease is accompanied with elevation of arterial carbon dioxide tension above its normal value adapted by the patients with or decrease in arterial pH.

Patients with stable chronic respiratory insufficiency treated with low flow oxygen, bronchodilators, antibiotics if indicated, corticosteroids. But, patients with acute on top of chronic respiratory failure may need ventilatory support either noninvasive or invasive mechanical ventilation to decrease the load imposed on respiratory muscles.

Invasive mechanical ventilation using either conventional modes of ventilation like assist control mode (volume or pressure limited), synchronized intermittent mandatory ventilation (SIMV) and minute mandatory ventilation (MMV) or new modes of ventilation like proportional assist ventilation (PAV), adaptive support ventilation (ASV), dual control either within a breath or between breath to breath.

Noninvasive mechanical ventilation avoid the known complications associated with invasive airway management with consequent decrease in the incidence of nosocomial or ventilator associated pneumonia, hospital length of stay and mortality rate but it has its contraindications and complications as it has its advantages.

After resolution of the cause of initiation of mechanical ventilation, weaning of these patients must be considered as soon as possible with

avoidance of premature weaning using several predictors of weaning. All these predictors have their specificity and sensitivity and none of them is 100% accurate.

Once the patient is ready for weaning, he or she is subjected to a weaning process either abrupt one or gradual one using spontaneous breathing trials.

Spontaneous breathing trials performed using T-tube trial, PSV, SIMV or NPPV and recently ATC and NeoGanesh (SmartCare) ventilation.

Weaning failure has their causes that must be recognized and treated before attempting another trial. We must also to assess the availability to extubate the patient whether the patient can maintain patent airway or not, efficacy of cough reflex, presence or absence of laryngeal edema before extubation of the patient to avoid the risk of reintubation with its sequels.

Before discharging the patient from ICU, we must assess the criteria of discharge to avoid re-admission.