

Acute severe asthma

Pharmacological treatment for acute severe asthma:

1. High flow oxygen
2. Steroids
 - Intravenous hydrocortisone 200 mg stat then 100 mg Q6H. Higher doses of hydrocortisone may be necessary
 - Nebulized or aerosolized steroids eg budesonide, beclomethasone dipropionate once patient recovers
3. Salbutamol
 - Nebulized salbutamol* 5 mg. Frequency range from continuous to intermittently according to clinical state.
 - Inhaled salbutamol# (100µg per puff) via metered dose inhaler through a spacer (eg aerochamber)
 - Intravenous salbutamol 100 – 300 µg loading then 5 – 20 µg/min for severe cases
4. Ipratropium bromide
 - Nebulized ipratropium bromide* 0.5 mg q4hourly
 - Inhaled ipratropium bromide# (20µg per puff) via metered dose inhaler through a spacer (eg aerochamber)
5. Intravenous magnesium sulphate 50% 2g (4mmol) in 50 ml NS over 15 minutes
6. In severe cases, when bronchospasm is refractory to pharmacological treatment, discuss with your consultant for inhaled isoflurane

Note: * Nebulization permitted in patients if a) patient is intubated and b) SARS/atypical pneumonia is not suspected.

For spontaneous breathing patients either through endotracheal tube/T-piece or extubated patients, then use metered aerosol inhaler

Intubation and mechanical ventilation of patients with acute severe asthma is indicated if

1. cardiac arrest
2. respiratory arrest
3. deteriorating conscious state
4. progressive fatigue
5. progressive hypercapnia

Suggested ventilatory strategy: (similar to acute exacerbation of COPD)

Initial settings:

SIMV

Tidal volume: 6 ml per kg body weight

Preset CMV rate 20/min (in Servo 900C and Servo 300); breath cycle: 3 s
(Servo i)

SIMV rate 10 per min

I:E ratio: 1:4 (in Servo i)

Pause time = 0

PEEP=0

↑ Peak pressure alarm to appropriate level if the plateau pressure is not high eg 60 cm water *

Every 4 hours and after changes in ventilatory settings

Measure

- intrinsic PEEP (if patient is sedated and paralyzed) by pressing the end-expiratory breath hold button
- plateau pressure by pressing the end-inspiratory breath hold button

Aim intrinsic PEEP \leq 10 cm water and plateau pressure \leq 20 cm water

Intrinsic PEEP may be decreased by:

1. ↓ respiratory rate
2. ↓ tidal volume
3. ↑ I:E ratio (in Servo i)
4. ↓ cycle time (in Servo i)
5. ↑ the CMV rate in relation to SIMV rate (in Servo 900C or Servo 300)
6. Bronchodilator therapy

If plateau pressure $>$ 20 cm water, tidal volume should be reduced if tidal volume $>$ 4 ml per kg and pH $>$ 7.2

If pH $<$ 7.2, tidal volume or respiratory should be increased as appropriate

PEEP is permitted in patients taking spontaneous breath

Note: High peak airway pressure is commonly observed in ventilating patients

with obstructive airway disease (especially in acute phase). The risk of barotrauma is closely related to plateau pressure NOT peak airway pressure.

Investigations

CXR – look for complications eg. pneumothorax, consolidation (see treatment of pneumonia)

Supportive care:

Appropriate sedation and paralysis (especially in acute phase) to facilitate ventilation

Prophylaxis against DVT (fraxiparine 0.3 ml- 0.4 ml per day SC) + pressure stockings

Prophylaxis against stress ulcer (raniditine 50 mg Q8H iv)