

Beta blocker overdose

Set-up:	
Lines/access:	RIJ CVC & left radial arterial line
Infusions:	Sedatives, noradrenaline, 1L crystalloid at 100ml/hr running
Airway:	ETT 22 cm at the teeth
Ventilator:	PC-SIMV, Pinsp 12, PEEP 5, Vt 420 ml, RR 20, FiO2 0.35, bilateral air entry
Other:	<p>Extra on top of the infusions already running: three infusion pumps, additional fluids, at least 3 giving sets, ampules of: glucagon, insulin, noradrenaline, metaraminol, calcium gluconate, atropine, adrenaline</p> <p>ITU chart + drug chart</p> <p>Patient's notes, bloods, ABG x2, CXR x1, ECG x2</p> <p>Toxbase (mirtazapine, bisoprolol, high dose insulin euglycaemic therapy, paracetamol, acetylcysteine antidote dosing)</p>

Clinical Setting

I: You are the ICU registrar on a day shift immediately after handover, the nurses are awaiting a plan for the recently admitted patient in bed 7

S: Nurses do not have a clear plan for what to do

B: 42M admitted from Resus and hour ago. Found unconscious with an empty blister packet next to them and needed to be intubated for airway protection. It is currently thought to be a mirtazepine and alcohol overdose and no specific treatment has been given. They had a CT head performed on the way to ITU and the verbal report from the radiology consultant is that it is entirely normal.

A: Sedated, ventilated, peripherally cool and shut down up to elbow.

R: Called for help

Potential Clinical Course

- Initially **A** ETT, **B** PC-SIMV, Pinsp 12, PEEP 5, Vt 420 ml, RR 20, FiO2 0.35, bilateral air entry, **C** HR 52, bpm SR, BP 101/51, **D** Sedated
- Progression will depend on the actions taken by the candidates:
- If fluid challenge or atropine given- complete heart block with hypotension
- If noradrenaline or metaraminol given- complete heart block with slightly higher blood pressure
- If low dose adrenaline or isoprenaline given- sinus bradycardia with hypotension
- If glucagon given- normal SR, normotension
- If the candidates struggle- a plan can propose use of glucagon/HIE as a life saver

Info Sheet For Faculty

- Initial settings:
 - SpO₂ 99% on FiO₂ 0.35
 - PC-SIMV, P_{insp} 12, PEEP 5, V_t 420 ml, RR 20,
 - EtCO₂ 3.5kPa
 - Bilateral air entry
 - HR 52bpm, SR
 - BP 101/51, MAP 68

- Progress to:
 - SpO₂ 92% on FiO₂ 0.35
 - PC-SIMV, P_{insp} 12, PEEP 5, V_t 420 ml, RR 20,
 - EtCO₂ 3.5kPa
 - Bilateral air entry
 - HR 30 bpm complete heart block
 - BP 85/32, MAP 50

- If fluid challenge/atropine given
 - Progress to: HR 30, complete heart block, BP 85/32 (MAP 50)

- If noradrenaline/metaraminol given:
 - Progress to: HR 30, complete heart block, BP 92/41 (MAP 58)

- If low dose adrenaline/isoprenaline given:
 - Progress to: HR 40, sinus bradycardia, BP 92/41 (MAP 58)

- If glucagon given
 - Progress to: HR 69, SR, BP 101/51 (MAP 68)

Faculty Roles

Bedside Nurse 1:

- You are a senior ITU nurse
- You are looking after a 42M with suspected mixed overdose (alcohol and mirtazapine?)
- Patient has just been transferred, you have already taken handover from the resus nurse, but you do not yet have a plan for what to do next
- You want to know if the patient should be on fluids or if there is anything else that needs to be done
- You take direction well, and can perform tasks asked if you in a timely fashion

Bedside Nurse 2:

- You are a new starter; this is your second day in ITU
- You are quite startled when asked questions/given directions, requiring instructions to be repeated to you
- If the candidate names equipment using technical terms, then you inform them that you don't know what that is
- You are keen to help, but are unwilling to do anything beyond your skill set

If asked for help, ITU consultant available with some delay.

HILLO: 6