Penetrating Thoracic Trauma

Patient ID: 19 yr old male

PMHx: Asthma

Meds: Ventolin Allergies: NKDA

Hx: at event at local bar, altercation outside, friends witnessed punch to face, Stabbed, unclear location, assailant ran away –EMS arrival 5min following 911 activation, ER arrival 15 min after 911 call

Initial EMS Vitals: P120, BP 100/50, Sat 96%

Patient Presentation: nurse provides history of event

Exam:

* Neck
  + Zone II, L side, penetrating injury
  + Significant expanding hematoma, obscured by C-collar
  + Stridor
* L thorax
  + Single penetrating injury with PNEUMOTHORAX
  + Decreased L sided AE
* Facial trauma

Monitor Vitals: P 120, BP 95/55, RR 25, Sat 96% on NRB

When requested:

Glucose = 7.2 mmol/L

Temp axilla = 35.8oC

**Expected Management:**

IV established by EMS

RT has applied NRB for 100%

100% O2 by NRB, Monitor, Confirm IV access

AIRWAY

Intubation –

* Anticipation of difficult airway ,verbalize and prepare – call anesthesia

1. RSI w/ double set-up

* Ketamine 2 mg/kg OR Etomidate 0.3 mg/kg OR Propofol 2-3 mg/kg
* Succinylcholine 2 mg/kg, Rocuronium 1 mg/kg
  + Attempt with RSI – successful

1. Awake intubation w/ double set-up

* Ketamine or Midaz
* Spray Lidocaine
  + Attempt successful
  + Subsequent sedation / paralysis

OK to remove C-spine collar

Post-intubation sedation

BREATHING

L sided chest tube

* Full prep up to cutting – “chest tube advanced” by nurse
* 900 cc of blood out from chest tube, no ongoing drainage

CIRCULATION

EDUS – No effusion, No FF abdomen

Level 1 infuser

Max 1L crystalloid, uncrossed blood

DISABILITY

GCS 14-15, agitated, moving all extremities - prior to intubation

Sedate – Midazolam boluses

OTHER

CXR – if time allows, trainee needs to leave room for 15 sec to allow for CXR

Bloodwork: VBG, Type and Cross, CBC, lytes, BUN/CR, lactate, Ethanol

Stat Thoracic Surgery + ICU Consults

**ACTORS**

1. Nurse
2. RT

**RN Instructions**: (10 min)

Generally concerned and slightly frantic demeanor.

Provide history to resident on arrival:

*19 yr old man, in a fight outside bar, punches to head, stab wounds*

More history if asked:

*Weapon: assailant ran, weapon unknown*

*PHx: healthy other than asthma, uses ventolin*

*NKDA*

*Increasing respiratory difficulty*

Single antecubital IV access by EMS

Monitors to be placed when requested

Temperature provided only if requested: oral = **35.8oC**

Glucometer check if directed: **7 mmol/L**

If asked about exam or physical findings, may comment on the following:

*Agitated with noisy breathing*

*No apparent hemoptysis, hematochezia or subcutaneous emphysema*

*Blood soaked shirt L side > R side*

*Decreased air entry to left chest*

*Chest wound not sucking*

*Abdo soft, Pelvis stable*

*Moving all-4 extremities*

*No MSK injuries (as seen on mannequin)*

If attempt at chest tube placement, before skin is cut, state

*chest tube has been successfully inserted*

Attach Pleur-evac containing 900 mL blood, and notify trainee

*900 cc of initial drainage, no ongoing drainage*

**RT Instructions**: (10 min)

RT already in room with patient,

Patient is already on 100% O2 by NRB

Trying to calm down patient:

*He has decreased AE to L chest, and some noisy breathing*

*Trachea midline*

If asked about pupils: *equal bilaterally*

If asked about airway: *? do I hear stridor?*

If asked about C-spine collar: *placed by EMS for transport/precautions*

If requested, may set-up for intubation (ask for specific equipment desired), assist with airway adjuncts, and assist with intubation, secure tube, and put patient on ventilator

Tech Instructions:

**Set-up:**

Adult male mannequin

1. Neck – stab wound L sided neck (~3 cm)
   * Significant expanding hematoma, ? underneath plastic neck
2. L thorax
   * Single penetrating injury (~3 cm), just lateral to nipple
   * Available pleur-evac with 1300 mL of blood (hidden)
   * Bloody shirt L>R
3. Facial trauma
   * Bruising to L orbit and L jaw

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **P** | **BP** | **RR** | **Sats** | **Eyes** | **pupil** | **Other** |
| **Start** | 1A | 120 | 95/55 | 25 | 96 | Open | 4+ | ↓AE L side, stridor, agit, sweat |
| + intubation,  no chest tube | 1B1 | 125 | 90/50 | - | 95 | Closed | 4+ | ↓AE L side |
| No intubation  + chest tube | 1B2 | 130 | 95/50 | 35 | 93 | Open | 4+ | stridor, tiring, equal AE bilat |
| No intubation  No chest tube | 1B3 | 130 | 80/45 | 35 | 90 | Open | 4+ | Stridor, tiring, ↓AE L side |
| + Intubation,  + chest tube | 1C | 120 | 95/50 | - | 97 | Closed | 4+ | Good AE bilat |
| Post-blood | 1D | 120 | 100/60 | - | 97 | Closed | 4+ | Good AE bilat |

**Additional Comments:**

**References:**

Intubation – RSI

Induction: Ketamine 1-2 mg/kg

Etomidate 0.3 mg/kg

Paralysis: Succinylcholine 2 mg/kg

Intubation – Awake

Sedation: Ketamine 0.5-1 mg/kg

Lidocaine topical / aerosolized

Tube Thoracostomy - Size 32-36