ORIGINAL RESEARCH PAPER

Anaesthesiology

KEY WORDS: Trauma, Coagulopathy, Embolectomy

ORTHOPAEDIC TRAUMA CASES AND MASSIVE BLOOD TRANSFUSION : A DOUBLE EDGE SWORD

Dr Disha Saxena* Resident Doctor *Corresponding Author

Dr R. P Gehdoo Professor

Dr Sweety Purushotham

ABSTRACT

In 2017, 218 876 deaths due to road injuries have occurred in India, The number of deaths due to road injuries in India have increased by 58-7% from 1990 to 2017. This has been due to lack of Trauma facilities and lack of doctors who are trained how to manage trauma centres especially in rural areas. Management of a bleeding patient in a Trauma case is very challenging, it is necessary to identify patients at risk of bleeding and utilising prophylactic treatment protocols in order to have a good outcome. Main aim is to normalise coagulation profile as early as possible with available blood products. Early infusion of blood can decrease trauma induced coagulopathy. Hypothermia and dilution coagulopathy are associated with infusion of large volumes of crystalloids, hence early recognition that our patient will need blood transfusion will limit our use of crystalloids. In order to normalise the BP, heart rate, urine output and mental status in patients suffering from hemorrhagic shock, they are given several liters of crystalloids and colloids. We had a hemodynamically unstable patient in critical state with crush injuries on the right leg who got admitted at our hospital for emergency embolectomy and trauma surgery.

INTRODUCTION

Several trauma victims are at a high risk of developing Multiple Organ Dysfunction syndrome or death. To avoid this treatment priorities must focus on resuscitation from shock which includes appropriate fluid resuscitation and rapid homeostasis. Inadequate tissue oxygenation leads to anaerobic metabolism and resultant tissue acidosis .

The depth and duration of shock leads to a cumulative oxygen debt. Resuscitation is complete when oxygen debt has been repaid, tissue acidosis has been eliminated and normal aerobic metabolism is restored in all tissue beds. It is to be noted that aggressive fluid resuscitation may "pop the clot" and lead to more bleeding, hence limited, fluid resuscitation is beneficial.

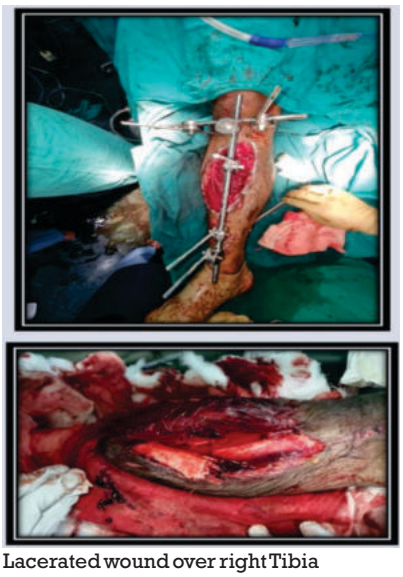

Figure 1: Lacerated wound over right Tibia

Case Study

18 year old Male patient c/o RTA was brought to the casualty on 31st of January 2021 at 9:00 PM, presented with lacerated wound over the right Tibia (15 x7 x 3cm) Patient sustained injury while riding the bike at 10:30 AM which caused 1/3rd Tibial exposed compound fracture with crush injury and Arterial bleed. Capillary refill time of right leg was absent, and distal pulse could not be felt.

The Proposed Operation:

Embolectomy from femoral artery and Debridement with external fixation with VAC application.

Status of the patient in the Casualty:

- Blood Pressure- 130/64mm Hg
- Pulse- 123 bpm
- Patient was NBM : Solids- 30/1/21 (9:30 PM)
- Liquids- 31/1/21 (12:00 PM)
- Patient's Spo2: 100% on 4 L O2
- CNS: conscious oriented, speech was normal
- Physical examination: no evident lung, abdominal injuries.

Pre-Operative Investigations:

Right Lower Limb Doppler Arterial Doppler: Right posterior Tibial Artery showed no colour flow and right Dorsalis Pedis Artery showed sluggish flow.

- Hb: 8.1
- TLC: 23,000
- Plt: 1,85,000
- Na/K/Cl : 137/ 4.9/106
- PT/INR: 24/1.76

DISCUSSION

Management In The Casualty :

- 18G cannula was taken on the right hand.
- Patient was on Infusion: Inj. Tranexa 1g/50ml at 8 ml/hr
- Inj. Tranexa 1g IV Bolus was given to the patient.
- 4 pints of NS and 1 pint of PRBC was infused to the patient Patient was catheterised and urine colour was noted as Normal

Intra-Operative Management:

The patient's BP was 70/60 mmHg was taken in the Operation Theater, for which the second pint of PRBC was transfused before the induction. Patient's BP came upto 100/70mmHg after which the patient was pre-medicated with Inj. Glycopyrolate 4 mcg/kg IV, Inj Midazolam 1mg IV, Inj Fentanyl 100mcg IV.

General Anaesthesia was the choice of Anaesthesia in view of Hypovolemic shock. Inj. Propofol was given in graded manner to avoid sudden hypotension in already compromised patient. Patient was intubated with 8 I.D ETT after giving muscle relaxant. 16G large bore IV cannula was taken on the left hand of the patient and the surgery was started.

The following fluids were given to the patient in the intra op period: 8 pints of FFPS were given Patient had sudden episodes of hypotension, for which two units PRBC was transfused, causing a rise in BP to 60/35mmHg. 5th pint of PRBC was transfused slowly towards the end, 5 pints of RL were given and 1 pint of colloid.

Patient was given Furosemide 10 mg IV as his output was not adequate.

- Blood loss: 1800 ml
- Urine output: 1200ml

Intra Op Investigations:

- Hb: 10
- Na/K/Cl: 132/6.3/110
- ABG: pH: 7.3
- pCo2: 45.4
- Po2: 289.7
- HCO3: 22

Poat Operative Management:

- Patient was transferred to MICU-1 post op
- for further management
- On Day 1 Post Op: Bp: 160/80 mm Hg
- P: 83 bpm
- Spo2: 100% on CPAP MODE (Intubated)
- Patient was conscious, oriented,
- I/O: 420/550
- HGT: 129
- Patient was extubated at 3 PM
- One pint PRBC was transfused at 5:15 pm
- Dorsalis Pedis pulsation could be felt
- Post-Op CBC: Hb: 6.6
- TLC: 14,700
- Plt: 65,000
- Na/K/Cl: 136/3.9/105
- On Day 2 Post op: Bp: 125/80 mm Hg
- P: 81 bpm
- Spo2: 100 % on 4 L O2
- CNS: conscious and oriented
- RS: AEBE
- Cvs: S1 S2 +
- I/O: 2210/1570
- HGT: 151 1 pint PRBC was transfused at
- 5:00 PM
- Post op day 2 investigations:
- Hb : 7.2
- TLC: 11,200
- pLT: 72,000

CONCLUSION

Patient could not be started on vasopressors intra-op as patient's right limb was already compromised due to the lack of blood supply and the delay in treatment. Due to the massive Blood transfusion that was given to the patient there were chances of fluid over load, so a careful monitoring of the urine output was necessary.

Crush injury that was sustained, patient could develop impaired renal functioning Patient was in a critical state, with increased mortality and morbidity risk, patient was managed efficiently in the peri operative period .

REFERENCES

1. Divatia JV. Blood transfusion in anaesthesia and critical care: Less is more!. Indian J Anaesth 2014;58:511-4
2. Bhatia PK, Biyani G. Fluid resuscitation in severe sepsis and septic shock: Shifting goalposts. Indian J Anaesth 2015;59:269-71.
3. Yaddanapudi S, Yaddanapudi LN. Indications for blood and blood product transfusion. Indian J Anaesth 2014;58:538-42.
4. Ramakrishnan VT, Cattamanchi S. Transfusion practices in trauma. Indian J Anaesth 2014;58:609-15.
5. M.D., D.A., F.C.C.P., D.C.C.M., (Cardio) M.C.A.M., Secretary, National Board for Trauma Courses, ITACCS (Indian Chapter) Correspondence to: Ganapathy N, Director, Dhanvantri Critical Care Center, 27, 28, Poonkundranar Street, Karungalpalayam, Erode – 638 003, Tamilnadu, India. E-mail:editoritaccs@gmail.com, ctlsindiaitaccs@gmail.com Accepted for publication on:26.9.07
6. Gopinath R, Sreekanth Y, Yadav M. Approach to bleeding patient. Indian J Anaesth 2014;58:596-602.