REGIONAL BLOCKS IN EXTREMITY TRAUMA

Maj S MEHROTRA ^{*}, Lt Col ASOK SAHA ⁺

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Introduction

Anaesthesia in field setting needs to be modified as per the available resources and the expertise of the operators without compromise on quality or safety. Regional anaesthesia (RA) offers numerous advantages but its scope and efficacy is under utilised. Its role in trauma is even lesser utilised which happens to be the leading disease entity of modern times and occupies the highest priority in national statistics. In war and counter insurgency operations scenario its role needs to be reviewed. Expert field block techniques and skills, resuscitation, anaesthesia of battle casualties is possible, contrary to the belief of forward mobile medical units on the war front [1]. The earliest descriptions of regional blocks in trauma have been associated with military medicine. We describe here two patients with major extremity injuries requiring surgery. These were conducted under regional block technique in a remote border hospital without the expertise of an anaesthesiologist.

Case Report -1

A 25 year soldier, was evacuated to hospital from a forward post with history of injury both knees. While engaging an enemy target, a 14.5 mm armour piercing tracer shell accidentally exploded between his knees. On reception he was stable but in pain. Pulse was 106/min, respiratory rate 22/min, blood pressure 110/70 mm Hg and weight 71 kgs. His field dressings were soaked in blood. Clinically there was no distal neurovascular deficit or evidence of fracture. X-ray confirmed there was no bony injury. Wound inspection revealed extensive soft tissue injury over medial aspect of right knee with a 6" by 10" stellate burst open wound. There was 2" by 3" laceration on the medial aspect of left knee. Both wounds had oozing and gross contamination. Due to constraints it was not possible to avail an anaesthesiologist's expertise or evacuate the patient. Necessity of emergency intervention required a locoregional anaesthesia approach. Local infiltration was deemed unsatisfactory due to the extensive area and depth of injury. Hence it was decided to operate under regional nerve block along with paramedication analgesia.

A '3 in 1' femoral block using paravascular technique was administered using 25 ml of 0.5% Bupivacaine and 5 ml of 2% Lignocaine [2]. Compression below the injection site was maintained to permit spread of solution to the femoral, obturator and

lateral cutaneous nerve of thigh.

The left leg laceration was meanwhile debrided under local infiltration with 15 ml of 0.25% Bupivacaine. The '3 in 1' block became effective in 25 minutes. Patchy block at the superior aspect of wound on the thigh was supplemented with local infiltration. The anaesthesia permitted unhindered exploration and debridement of wound till the shaft of femur without discomfort to patient. There was no major neurovascular injury on exploration. More than 50 splinters of the shell propellant and foreign bodies were removed from the wound. Patient was comfortable throughout the 50 min duration of surgery under femoral block. There was good post operative analgesia. Patient was subsequently transferred to a larger centre where he had a satisfactory recovery.

Case Report-2

A 14 year village boy was brought to hospital with history of blast injury left hand. A left hand dominant individual, he was handling a partially exposed landmine out of curiosity when it exploded. On admission he was pale with a pulse of 124/min, respiratory rate 22/min, and BP of 100/60 mm Hg. There was bleeding from the mutilated hand with an approximate blood loss of 400-600 ml. There were multiple lacerations over his face and left leg with corneal injury right eye. He also had powder burns over his face and left leg. Hand bleeding was controlled by tourniquet and IV fluids and supplemental therapy was started. Investigations revealed a Hb of 8 gm%. X-ray showed loss of all digits with fracture of the distal third of radius and ulna. The wound was inspected in the operation theatre under analgesia and sedation with 25 mg Pethidine and 5 mg Diazepam. The hand was grossly mutilated with loss of fingers. The thumb was transected at its base and hanging by a shred of tissue. There was loss of majority of palmar skin whereas the dorsal skin was avulsed till above the wrist. Significant blood loss was evident. Since anaesthesiologist expertise was unavailable it was decided to operate as an emergency under brachial plexus block using the axillary route.

The procedure was explained to the boy and perivascular injection technique without tourniquet was followed. 20 ml of 0.5% Bupivacaine and 2 ml of 2% Lignocaine was employed for administering axillary block. Debridement of facial and leg wounds was done under local infiltration. The axillary block took effect in 20 minutes and permitted a thorough debridement of hand injury. Haemostasis of transected ulnar artery and other vessels was done. Rather than proceed with a forearm amputation it was decided to attempt salvage of palm. Since dorsal skin was attached to fascia it was used for cover. Patient had a satisfactory recovery post operatively. Subsequent second look operation revealed viable palmar tissues and minimal skin loss. He recovered with salvage of palm and is planned for groin pedicle flap for palmar skin cover.

^{*}Classified Specialist (Surgery), ⁺Commanding Officer, 168 Military Hospital, C/O 56 APO

Discussion

The debate of regional anaesthesia vs general anaesthesia (GA) for trauma cases raises issues of safety, appropriateness and also patient acceptance and success rate. The benefits of RA are self-evident with drug effect limited to part of body operated, fewer complications, high quality post operative pain relief and as an option when GA is not available [3]. The last factor is an important consideration in difficult situations like war and counter insurgency operations. In extremity operations with possible vascular compromise RA not only increases regional blood flow, there is maintenance of calf muscle temperature, inhibition of coagulation and fibrinolysis [4]. Stress of surgery is considerably decreased by RA thereby reducing mortality [5]. RA also preserves consciousness and patient protective reflexes. In our cases surgery was inescapable but constraints prevented timely evacuation. Regional blocks not only permitted complete surgery they also prevented morbidity.

A 3 year retrospective analysis of our field hospital data revealed that extremity injuries constitute 84.5% of major trauma and 77.7% of minor cases. These figures are apparently due to the fact that mine blast injuries and artillery shelling constitute the major source of injuries in our sector. Most head, neck and chest injuries are fatal, contributed in part by primary damage as also delays in evacuation from remote forward areas. Protection by bullet-proof vests is also likely to be a cause of skewed data. Trauma cases limited to extremities are ideally suited for regional

blocks. The most important prerequisite according to McConchie is a thorough knowledge of anatomy [6]. RA is established justly for trauma victim management. In frontline military operations faced with numerous constraints RA offers comprehensive management of battle casualties with efficiency, safety and quality of patient care [1]. Nerve blocks should generally be administered by anaesthesiologists. However, in emergency limb/life saving situations where timely anaesthesiologist expertise is not available even surgeons can administer regional block anaesthesia with safety, speed and efficacy. The results are consistent and gratifying in the setting of trauma.

References

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