Commentary

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Journal of Intensive and Critical Care
ISSN 2471-8505

2021
Vol.7 No.2

Anaesthesia in Trauma patients

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Received: February 2, 2021; **Accepted:** February 16, 2021; **Published:** February 23, 2021.

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Citation: Justin Lusi Anaesthesia in trauma patients. J Intensive & Crit Care 2021, 7:2.

Anaesthesia, Trauma and important Care is a world trauma and anaesthesia organization.

It is a non-profit charitable organization whose objective is to deliver teaching in trauma management and patient care. The organization's primary activities are teaching medical practitioners and other emergency services personnel within the management of trauma and pre-hospital care. In addition to its educational resources, the organization also has an ATACC Medical Rescue Team (ATACC MRT), composed of practitioners from all specialities. It operates and is out there for the needs of trauma care management within the pre-hospital care environment throughout the UK on a voluntary basis.

Background

Resuscitation goals for trauma patients have undergone significant change within the past decade. Appropriate blood product transfusion ratios, use of pharmacologic adjuncts (e.g., tranexamic acid (TXA)) and other modalities have improved survival for the wounded combatant. In the operating room, this resuscitation occurs in the context of providing an anesthetic that minimizes hemodynamic instability in the severely injured patient.

Specific considerations for trauma anesthesia

Hypothermia is one among the arms of the lethal triad of coagulopathy, acidosis, and hypothermia.5 it's important, therefore, to warm the OR to greater than 30˚C and have a warmed intravenous (IV) line, forced air warmer, and rapid infuser with warming capability immediately available. Standard checks (e.g.,anesthesia machine check, verification that airway equipment, medications, and special tools are in good working order) assure that vital equipment is ready for immediate use.

The presence of anaesthesia in the trauma bay is necessary for smooth transition of care to the OR and offers the opportunity to assist with invasive procedures. Identification of team roles before patient arrival facilitates effective transfer from the delivering team.

Induction of Anaesthesia

Induction of anaesthesia in the exsanguinating patient can be disastrous. On-going volume resuscitation to prevent this from occurring is critical. After a patient is identified for surgery, verification of functioning vascular access (either IV or intraosseous) and placement of monitoring devices (e.g., oxygen saturation, vital sign, and electrocardiogram) must occur quickly. Do not delay induction of the patient in extremis for placement of central access or invasive monitoring. Placing monitors at an equivalent time because the surgical prep and drape can save time during a crisis. A wide draping procedure with "arms out" ensures adequate surgical exposure, while affording access to the arms as required after the beginning of surgery. Pre-oxygenation with four full capacity breaths can "de-nitrogenate" the top alveoli sufficiently to optimize oxygenation before rapid sequence induction.

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Prompt endotracheal intubation of the trachea following induction mitigates the danger of aspiration. Rapid sequence induction (RSI) with direct laryngoscopy may be a safe and effective method to secure the airway of the trauma patient. The efficacy of in-line stabilization during RSI is somewhat controversial; however, it remains prudent to attenuate the manipulation of the cervical spine to the extent possible during laryngoscopy. Regardless, it's re-assuring to understand that medulla spinal injury following direct laryngoscopy rarely causes or worsens cervical spine injury.

Maintenance of anaesthesia

Maintenance of anaesthesia can be accomplished via an inhalational volatile agent or via a total IV anesthetic (TIVA). Both approaches must be carefully titrated to the hemodynamic Profile while assuring adequate sedation/hypnosis and analgesia. Awareness during anaesthesia and the acute pain response can be mitigated during TIVA by assuring that both a sedative hypnotic (e.g., propofol, benzodiazepine) and an analgesic (e.g., narcotic) are being administered. Narcotic dose can be titrated to hemodynamic.

Conclusion

Combat trauma patients are “the sickest of the sick.” the need for on-going resuscitation during induction and maintenance of anaesthesia can complicate management. Awareness of the patient’s entire physiologic and volume status is critical to successful management and outcomes.

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