Singapore Med J 2010; 51(11) : 901

ADRENALINE ADMINISTRATION THROUGH THE CRICOTHYROID MEMBRANE DURING CARDIOPULMONARY RESUSCITATION IN A PATIENT WITH DIFFICULT INTRAVENOUS ACCESS AND DIFFICULT AIRWAY

Dear Sir,

Intratracheal drug administration has long been used during resuscitation. We describe our experience where intratracheal adrenaline was administered through the cricothyroid membrane during cardiopulmonary resuscitation (CPR) when both intravenous access and tracheal intubation were initially unsuccessful.

A 20-year-old man was admitted to our emergency unit after a road traffic accident. The patient had suffered a crush injury over both his lower limbs, and was unresponsive. He had a swollen face and a Glasgow Coma Scale of 4. Signs of upper respiratory obstruction were present, and there was bleeding from his mouth. Bag and mask ventilation was started. The cardiac rhythm showed ventricular fibrillation. Defibrillation was performed and chest compressions were started. The patient was cold and clammy, and multiple attempts to secure an intravenous access failed. Tracheal intubation could not be performed despite using a stylet, as there was bleeding and oedema of the face. There was no carotid pulse after two minutes of CPR.

While arrangements were being made for intubating laryngeal mask airway (ILMA), tracheostomy and securing an intravenous access, we performed a cricothyroid membrane puncture using an intravenous cannula and confirmed its tracheal position by aspirating air. Subsequently, 2 mg of adrenaline was diluted in 20 ml of saline and instilled intratracheally. CPR was continued and the sinus rhythm was restored after another minute. Meanwhile, an intravenous access was secured and tracheal intubation was performed using an ILMA. The vitals of the patient improved, and an emergency external fixation was perfomed under general anaesthesia. Fentanyl 100 mcg and midazolam 2 mg were administered intravenously. Sevoflurane in oxygen and nitrous oxide was also administered to the patient. He remained stable intraoperatively and was moved to the intensive care unit, where he was kept on ventilator support with midazolam infusion. Oedema of the face decreased and bleeding from the mouth stopped. No injury was seen on radiological imaging of the patient's head, neck and face. Tracheal extubation was performed after 24 hours, and the patient was fully conscious and oriented. He was transferred to the postoperative ward where he remained stable, and was discharged from the hospital after five days.

Although the success of CPR could have been due to chest compressions and mask ventilation alone, adrenaline administration through the cricothyroid membrane seemed to have an added benefit. In addition, time was saved since it took almost five minutes to secure an intravenous access and intubate the trachea. This serves to highlight the usefulness of cricothyroidotomy-assisted intratracheal adrenaline administration in a difficult case.

Yours sincerely,

Rajeev Sharma

Department of Anaesthesiology
ESI Hospital
Rohini
Sector 15
New Delhi 110085
India
Email: rajeevkrsharmaji@gmail.com