Dear Editor,

The review article by Kumar V et al was quite informative and interesting. The authors have quite excellently described the pathophysiology and management of shock in brief. In addition to what they have mentioned I would like to highlight some more points.

The successful management of shock requires treatment of the cause, optimization of cardiac output and systemic oxygen delivery and restoration of tissue perfusion. It requires frequent assessment and monitoring of patient.

The management of shock is done by Management by the ABC of resuscitation. This includes endotracheal intubation even if there is normal PaCO2 or PO2. Airway control should be based on the clinical state of the patients and not on the values of the arterial blood gas analysis. Early endotracheal tubing allows mild hyperventilation to partially compensate for metabolic acidosis. Shocked patients may appear stable but with decreased oxygen delivery to all muscles including the diaphragm, can result in respiratory fatigue & failure. Hence early control ventilation is needed.

Fluid management- if peripheral percutaneous cannulation is not available in 60-90 secs, we must do intraosseous cannulation (especially in children less than 6 yr s). This can be done in the medial aspect of tibia, 2-4 cm below the anterior tibial tuberosity using a 16-18 guage needle.

Only 25% of the crystalloid volume administered remains in the intravascular space. Albumin provides 80% of the intravascular oncotic pressure (with molecular weight of 69000 it is impermeable to vascular membrane in normal condition). In septic shock, albumin is able to pass to the interstitial space. The T ½ of albumin is 24 hours; it fulfills its hemodynamic role in 36 hours.Hence can be used in initial phase (Clinical research has demonstrated that colloid is not superior to crystalloids in the treatment of shock).

The lactate found in ringer lactate solution is buffer and is converted by liver in the Cori cycle to bicarbonate. The sodium in ringer lactate solution is hypotonic. In normal saline solution large amount can cause metabolic hyper chloremic acidosis.

Hypertonic saline (7.5% NaCl) increases osmosis, promotes movement of endogenous fluid from the extravascular to the intravascular space. It increases the inotropic function of the heart and causes constriction of the capacitance vessels, decreases resistance vessel and causes dilatation of precapillary sphincters. The adverse effect is hypockalemia. It has benefit in patients with closed head injuries or at risk of cerebral oedema. Dextrose containing fluids should not be used for volume expansion.

In cardiogenic shock fluids initially improve cardiac output and perfusion but delayed effects include and increase in the extracellular fluid & pulmonary oedema. Therefore inotropic agents are needed. In hypovolaemia shock treatment includes fluids to restore cardiovascular function, peripheral perfusion, urine output (>1 ml /kg/ hr) & to correct the lactic acidosis. I/ V normal saline 20-30cc/kg quickly + inotropes(in initial phase) are used in septic & distributive shock .Rapid fluid resuscitation in excess of 40 ml/kg in first hour was associated with improved survival & decreased occurrence of persist ant hypovolaemia & no increase in the risk of cardiogenic pulmonary oedema.

We must check the pH, serum electrolytes including calcium, bloodglucose, urea, creatinine, haemoglobin, haematocrit & platelets. If pH < 7.2,sodium bicarbonate 1-2 meq/ kg is given. For hypocalcemia, calcium chloride(10%) of calcium gluconate 0.1-0.2 cc/kg administered over 10-15 minutes. For hypoglycaemia ( Blood Glucose less than 60% of normal ) 1cc/ Kg of 25% dextrose or 2cc per kg of 10% dextrose is given. We must look for symptoms and signs of DIC. Blood transfusion is given to maintain the haematocrit between 35-45%. Apart from dopamine and dobutamine, amrinone (adult dose 0.75mg/kg in 3-5 minutes and paed. Dose 2-4 mg/kg) is given. Epinephrine (0.05 to 0.2 mic.g/kg/min)and nor epinephrine (0.05 –0.2 mic.g/kg/min) is also given.

Gastrointestinal support with H2 receptor antagonist and antacids, early NG feeding, broad spectrum antibiotics (3rd generation cephalosporins + aminoglycosides+ Cloxacillin) etc. are given. Adjunctive support includes immunotherapy.

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REFERENCES


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