

RESUSCITATION GOALS AND METHODS

Haemorrhagic shock occurs when blood volume deficits significantly reduce cardiac filling pressures, cardiac output, drops and perfusion is inadequate. This drop in cardiac output usually requires a loss of 20-40% of blood volume. With more than 40% loss of blood volume severe shock close to exanguination occurs. Shifts of fluid and protein from the extra vascular space to the intravascular space partly compensates for blood loss. This can take a period of time up to one hour and this is why serum haemoglobin in an exanguinating patient may be normal.

The goals of resuscitation should be to arrest the haemorrhage. This usually requires a surgeon or some first aid manoeuvre.

Aims of Workstation

In this workstation the group will become familiar with the concept of

- normotensive,
- hypotensive and
- failed resuscitation in a remote environment.

Persistent bleeding in the absence of blood and ability to arrest a haemorrhage will eventually lead to a failed resuscitation and the patient's demise. In a patient, however, who is bleeding slowly with an estimated pre-hospital time of 1-2 hours, it is important that the treating nurse, doctor or ambulance officer give consideration to maintaining the blood pressure at a slightly subnormal level. This may have the advantage of reducing blood loss, by reducing the cardiac output and the perfusion pressure while maintaining critical flow to vital organs such as the brain and kidneys. Over zealous transfusion or fluid administration may give rise to persistent uncontrollable haemorrhage with haemodilution and coagulopathy. It is important that the candidates remember that once airway and breathing have been controlled, that resuscitation should be commenced it is preferable to be over vigorous at this point rather than allowing the patient to remain shocked.

The goals would be to maintain the blood pressure above 90mmHg, heart rate below 140 beats/minute if possible to maintain urinary output. Because of the polytrauma nature of some of these injured patients, this fine titration is not always possible.

If the opportunity exists certain basic principles should be adhered to:

1. Prevention of hypothermia
2. Prevention of scalp bleeding and external blood loss by simple suturing
3. Avoidance of large pressure pads in favour of small pressure pads and digital pressure - tourniquets in remote locations may be lifesaving and limb loss is preferable to body loss.

RESUSCITATION GOALS AND METHODS cont'

The initial shock patient should receive an infusion of 1-2 litres of fluid. This should ideally be warm, it may be crystalloid or colloid. It should not be dextrose 5%. If the patient does not respond to the first bolus, a second litre may be administered. Ideally no more than two litres of crystalloid or colloid should be administered to the patient without blood transfusion as haemodilution would reduce oxygen carrying capacity and aggravate the shock further.

The use of hypertonic solutions for resuscitating injured patients is a source of controversy. 7.5% sodium chloride increases the blood pressure more effectively than any other balanced solution and may have some beneficial effect.

It is vital to remember that hypovolaemia in the rural situation is one of the commonest causes of trauma deaths.

The MAST suit has been used as an alternative method to intravenous infusion for increasing blood pressure. It certainly has a role in the remote rural location especially in the patient with fractured pelvis. It has not been shown to improve survival in many studies in an urban environment and certainly contraindicated in certain penetrating injuries to the torso and in thoracic trauma. It may prove lifesaving in arresting pelvic haemorrhage from venous bleeding.

In terms of the shock patient, it is important to remember that the patient with warm peripheries and was hypotensive has probably got spinal shock. The treatment of which is similar to hypovolaemic shock. Cardiogenic shock and cardiac tamponade are extremely rare in blunt trauma and should be very low under differential diagnosis when resuscitating a trauma patient.

Remember use the ☎ telephone☎ as a resuscitation tool!