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STUDY OF RESUSCITATION WITH LOW MOLECULAR  
WEIGHT HYDROXYETHYL STARCH IN EXPERIMENTALLY  
INDUCED HEMORRHAGIC SHOCK IN DOGS

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The aim of this study was to investigate the effectiveness and safety of hydroxyethyl starch (HES), a low molecular weight synthetic colloid, in the resuscitation of hemorrhagic shock. Hemorrhagic shock was experimentally induced in 12 beagles by blood letting until the blood pressure remained stable at 40 mmHg for 30 minutes. Six of the dogs were then reinfused with 20 ml/kg HES over 5 minutes (HES group). The other 6 were infused with 60 ml/kg lactated Ringer's solution also over 5 minutes (LR group).

Heart rate, cardiac output, pulmonary arterial pressure, pulmonary capillary wedge pressure, femoral arterial pressure, central venous pressure and renal artery blood flow were measured. Complete blood counts, serum chemistry profiles, blood gas values, coagulation parameters and urinalyses were also done. The following results were obtained:

1. Both agents were equally capable of restoring and maintaining systemic and organ hemodynamics. In the LR group the cardiac index was significantly higher than in the HES group up to 30 minutes after resuscitation. It then decreased to the level of the HES group. Renal blood flow was significantly higher up to 15 minutes after resuscitation in the HES group. It persisted at a slightly higher but insignificant level throughout the anesthesia period.

2. The rates of decrease in the red blood cell, hemoglobin and hematocrit counts in the HES group were less than that in the LR group. Total protein in the HES group was higher than in the LR group.

3. The blood gas values in both groups were the same.

4. Serum chemistry profiles, coagulation parameters, urinalyses and the thickness of the spleen were similar in both groups.

These results suggested that systemic hemodynamics and renal blood flow were restored and maintained after resuscitation of hemorrhagic shock with low molecular weight hydroxyethyl starch. At the dosage used, no side effects were observed.

From the results of this experiment, it was concluded that low molecular weight hydroxyethyl starch can effectively and safely be used for the acute resuscitation of hemorrhagic shock in dogs.