

Literature Briefs

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Circulation

CORTICOSTEROIDS AND SHOCK In spite of the common use of corticosteroids in shock states, there is no general agreement concerning indications, dosages, or modes of action. All forms of shock have in common inadequate tissue perfusion that results in increased anaerobic metabolism. Except in the case of Addisonian crisis, shock is associated with high endogenous plasma cortisol levels. Therefore, the rationale for corticosteroid therapy in shock is not to supplement an inadequate adrenal response. Proposed mechanisms of action of corticosteroids include effects on the cardiovascular system, membranes, and tissue metabolism, as well as detoxification of endotoxin. The evidence for these effects is examined. Although corticosteroids are necessary for normal cardiac function, high doses are not inotropic and have no consistent effect on blood pressure or cardiac output in shock. The most recent studies have failed to demonstrate any alpha-adrenergic blockade, potentiation of catecholamines, or direct vasodilating properties. Corticosteroids may "stabilize" lysosomal, capillary, and cellular membranes against disruption by endotoxin and other insults. However, steroids were effective only when given before or concurrent with the insult. Also, the etiologic significance of the release of lysosomal enzymes in shock is not clear. In one study corticosteroids seemed to help reverse the metabolic acidosis of hypovolemic shock in man, but the difference between survival rates in the treated and control groups was small and possibly not significant. Another observation of unknown significance is that endotoxin can be detoxified by incubation with steroids. The important question is: What do steroids do in clinical shock? There is no evidence that their use is

beneficial in cardiogenic shock, and they might be detrimental. In hypovolemic shock, some papers suggest that steroids are helpful, but the relationship between corticosteroid therapy and patient improvement is not demonstrated. Although steroids are generally considered to be indicated in septic shock, certain studies of both low and very high dosages have failed to demonstrate beneficial effects. Those authors who have reported improvement in septic shock have used 1 to 2 g of hydrocortisone equivalent very early in the disease. There are several potential adverse effects of corticosteroid therapy, but these have been reported in only one study of the use of these agents in shock. Carefully designed prospective studies that consider adverse reactions are needed. (Reichgott, M. J., and Melmon, K. L.: *Should Corticosteroids Be Used in Shock?* *Med Clin North Am* 57:1211-1223, 1973.)

Respiration

CPAP IN CHILDREN This article reports an attempt to assess the effects of continuous positive-airway pressure (CPAP) on oxygenation. Arterial blood-gas measurements were made on 13 patients 2 to 24 hours after open-heart surgery. Samples were taken during intermittent positive-pressure ventilation, and also while patients were breathing spontaneously before, during, and after the application of CPAP. Inspired oxygen concentration was kept constant for each infant. Total static compliance of the respiratory system was measured in ten cases. The use of CPAP produced significant increases in arterial oxygen tension in infants with preoperative pulmonary venous obstruction, and in these infants postoperative compliance was low. CPAP produced no significant change in infants who had transposition of the great arteries or ventricular septal defects where postoperative compliance was normal. It is suggested that the use of continuous positive airway pressure be restricted to those con-