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### Fluids and Electrolytes

**VOLUME INFUSION AND PULMONARY EDEMA** The authors describe the effects of fluid challenge in 37 patients with suspected hypovolemia. None had clinical or radiologic evidence of pulmonary edema (PE) prior to the institution of therapy. Eight patients were in circulatory shock before treatment (mental confusion, mean arterial blood pressure less than 60 torr, urinary output less than 20 ml/hour, and arterial lactate more than 2 mmol/l). Five additional patients were hypotensive and oliguric but had normal blood lactate. Fluid challenge was instituted with either colloid or crystalloid at the discretion of the attending physician. Over a 10-minute period, 50-200 ml of fluid were administered while pulmonary arterial systolic and diastolic pressures were monitored continuously. Pulmonary-artery wedge pressure was measured 10 minutes after the infusion of each increment. In addition, colloid osmotic pressure (COP) was monitored. In 21 patients, there was no evidence of PE. Left ventricular filling

pressure (LVFP) was slightly elevated, but COP was not reduced. The majority of these patients had received colloid. In five of the 16 patients in whom PE developed, LVFP was elevated while COP remained unchanged. These patients, too, had received only colloid. In the remaining 11 patients with PE, LVFP was normal but COP *decreased*. In this group, two had received colloid (average load 1,472 ml), while two had received both colloid (1,700 ml) and crystalloid (5,000 ml). Seven of the 11 had received crystalloid alone, with an average load of 4,900 ml and average positive balance of 3,100 ml. Administration of furosemide was associated with clearing of pulmonary edema and normalization of plasma COP. The authors stress the importance of COP and conclude that it is "safer to administer colloids initially to correct the intravascular depletion" if hypovolemia is to be treated rapidly. *Stein L, and others: Pulmonary edema during volume infusion. Circulation* 52: 483-489, 1975.)