

Albumin bolus therapy is better than normal saline to treat hypotension in neonates

Eliza CİNTEZA, MD

Assistant Professor, 2nd Pediatrics Department, "Carol Davila" University of Medicine and Farmacy, Bucharest, "A. Rusescu" IOMC, Bucharest, Romania

Hypotension in neonates is a clinical problem, which can be associated with immaturity of vasomotor tone (most frequently), hypovolemia, depressed myocardial function, insufficient adrenal response to stress, pneumothorax, pneumopericardium, pericardial effusion, and metabolic disorders. Its definition varies in literature: less than 30 mmHg or less than the 10th percentile of a birth weigh and age specific range or mean arterial pressure, MAP, less than the number of completed weeks of gestation of the neonate. It is important to diagnose and treat it because of the poor long-term neurodevelopmental outcome and the increased rate of intraventricular haemorrhage. In the treatment of neonatal hypotension, the common practice is to start intravenous volume expander (normal saline preferred to albumin), add inotropes (dopamine and dobutamine most commonly used) and, in refractory hypotension, a single dose of dexamethasone can be added.

The commented study is a randomized, double-blinded study, which compare the

clinical responses to bolus infusions of either colloid (5% albumin, ALB) or crystalloid (normal saline, NS) fluid therapy in neonatal hypotension. The arterial hypotension was defined as MAP less than the 5th percentile for at least 10 minutes. The group included 101 infants, in two similar groups. Exclusion criteria were: culture-confirmed sepsis, acute perinatal blood loss, suspected or confirmed renal or cardiac anomalies, hydrops fetalis, need for blood –product transfusion during the study period or clinical status prohibiting adherence to protocol (diagnosis of pulmonary hypertension, need for high frequency ventilation). The comparison included the primary measure of response was the normal arterial blood pressure (> 10th percentile of the MAP) at 1 hour after starting the infusion, the secondary responses: arterial blood-pressure improvement score (towards 50 percentile of normal for weight), duration of normotension after a second bolus, the subsequent need for vasopressor therapy.

57.1% of the ALB bolus therapy randomized infants achieved a normal arterial blood pressure at 1 h, compared to 32.1% randomized

infants to NS ($p=0.01$). In addition, arterial blood-pressure improvement score was 0.24 ± 0.04 for babies with ALB bolus comparing with 0.14 ± 0.02 for NS group ($p=0.006$). Duration of normotension after a second bolus was longer in the ALB bolus group, 15.2 ± 11.0 h, versus NS group, 9.5 ± 10.9 h and the subsequent need for vasopressor therapy was less in the ALB group,

24.5% of the infants comparing with 44.2% of the NS treated infants ($p=0.03$).

In conclusion the neonatal hypotension responds better to ALB bolus therapy than to NS, with a longer duration of normotension after 20 ml/kg bolus and less need for inotropic infusion.



Comment on the paper:

Lynch SK, Mullett MD, Graeber JE, et al – A comparison of albumin-bolus therapy versus normal saline-bolus therapy for hypotension in neonates. *Journal of Perinatology* 2008; 28:29-33