Unexpected Hypotensive Events during Preparatory Plasmaphereses

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With interest I read the article by Diekamp et al. [1] on donor hemovigilance or unexpected events during preparatory plasmapheresis (PP) in this journal. Allow me to leave a comment on the treatment and prevention of unexpected hypotensive events during PP.

In a retrospective survey, which was presented at the 31st International Congress of the International Society of Blood Transfusion, Berlin, Germany, in 2010, we analyzed the course of 50 cases with severe acute hypotension during plasma donation [2]. A severe acute hypotension or severe hypotensive reaction was defined as a decrease of systolic blood pressure ≤ 90 mm Hg or a drop by more than one third of the initial systolic pressure with clinical signs such as pallor, sweating, or loss of consciousness. PP were performed in our center with the Haemonetics Plasma Collecting System 2 (PCS2). We found already that younger women had a higher risk for an acute hypotensive reaction during PP at their first and second plasma donation. The average time until the hypotensive event occurred was 45 ± 20 min, and the average volume of collected plasma was 602 ± 240 ml. So the unexpected hypotensive event occurred on average before the end or during the last cycle of PP when there was a maximum volume load of about 1,000 ml plasma and blood outside the donor body. When they were treated with rapid infusion of 2×500 ml NaCl 0.9%, all affected donors could be dismissed in good condition after an additional time of 49 ± 18 min.

It was concluded that at least all donors with hypotensive events occurring during the second or last third of PP were hypovolemic. Consequently, to avoid unexpected hypo-

volemic events during PP, an infusion of NaCl 0.9% 500 ml should be given during PP [3, 4]. If saline infusion was given after PP the loss of red cell mass with the tubing system could be reduced from 12,0 ml to 1,3 ml per donation on average [5]. However, the disadvantage of this method is that hypovolemic events cannot be prevented during PP. On the other hand, if 500 ml NaCl 0.9% is given step-by-step after each cycle during PP [4], there may not be enough NaCl 0.9% solution at the end of PP (100 ml) to re-infuse all the blood in the tubing system to the donor body.

During my years of experience as a clinical nephrologist, in hemodialysis patients 250 ml of saline infusion was added to the extracorporeal circulation at the beginning and 250 ml of saline solution was infused at the end of dialysis treatment to return the blood from the dialyzer and the tubing system to the body of the patient. Only 2–5 ml blood, or 1–2 ml red cell mass, per dialysis session were lost using modern dialyzers [6].

A saline infusion with 250 ml during and 250 ml at the end of the PP led to a slight, but significant dilution of total protein, IgG, and FVIII in collected plasma during PP [3]. However, the benefits to donor safety and satisfaction were compelling reasons to implement this method of saline infusion during plasmapheresis [3].

For quality assurance it is suggested to give ≥ 250 ml of NaCl 0.9% during PP to prevent hypotensive events and ≤ 250 ml at the end of plasmapheresis to re-infuse the blood in the tubing system to the donor. This regulation may be changed depending on the clinical indication.

References

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