

Membrane and centrifugal therapeutic plasma exchange: practical difficulties in anticoagulating the extracorporeal circuit

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In their recent Teaching Points article, Puppe and Kingdon [1] emphasize the higher risk of clotting when using plasma exchange (PE) with reduced doses of heparin in patients with an increased risk of bleeding, e.g. after biopsy or in patients with pulmonary haemorrhage. In these situations, the authors suggest using centrifugal PE with citrate anticoagulation as a favoured alternative to membrane PE with reduced heparin anticoagulation.

While we acknowledge the technical differences between centrifugal and membrane PE, we cannot completely agree with their conclusion. The reduction of heparin will inevitably increase the risk of clotting the extracorporeal circuit. Hence, regional citrate anticoagulation has been successfully implemented over the last few decades to avoid the risk of clotting while reducing the incidence of bleeding. Generally, both centrifugal PE as well as membrane PE can be performed by using either heparin or citrate anticoagulation. While bleeding complications can be substantially reduced, other potential side effects of citrate should be kept in mind, i.e. the risk of hypo- or hypercalcaemia or the development of metabolic alkalosis.

Using ACD-A solution (Fresenius®) and the given concentrations we would expect that the amount of citrate

used during one treatment session would be higher than stated in the table.

Furthermore, the authors emphasize the shorter treatment duration using centrifugal PE. This was achieved in part due to the exchange of 1 plasma volume which was calculated by the PE device, whereas it was only roughly estimated in the membrane PE protocol. The calculation of the plasma volume using established formula would adjust the differences.

In summary, we would underline that both centrifugal and membrane PE can be performed using either heparin or citrate. Choosing the appropriate anticoagulation is primarily dependent on the clinical situation of the patient.

Conflict of interest statement. None declared.

Reference

1. Puppe B., Kingdon E. J. Membrane and centrifugal therapeutic plasma exchange: practical difficulties in anticoagulating the extracorporeal circuit. *Clin Kidney J* 2014; 7: 201–205

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