

Can the nursing team perform effective heparin management?

Rui Sousa¹, Andreia Silva¹, Pedro Gonçalves¹, Ricardo Peralta², João Fazendeiro Matos²

¹Fresenius Medical Care, NephroCare Viseu, Viseu, Portugal

²Fresenius Medical Care, NephroCare Portugal, Porto, Portugal

Introduction

Currently, anticoagulant treatment in patients under haemodiafiltration is not evidence-based and individual anticoagulant treatment remains difficult in daily practice. The use of unfractionated heparin remains the most common and there is no consensus on the use of anticoagulants in these patients. Dialysis units developed their own standard strategies to avoid bleeding and clotting by adjusting the doses according to the visual inspection of the extracorporeal circuit (ECC) and based on experience.

Objectives

To analyse all events related to extracorporeal circuit coagulation, heparin dose and dialyser records.

Methods

The nursing team has specific training on heparinization of ECC. In 2015, they started recording the dialysers status, coagulation events and "coagulation time" at the end of treatment. We analyse all records from 2012 to 2017 involving coagulation events (coagulation of extracorporeal bloodlines and dialyser) (non-related to vascular access) and individual heparin doses.

Results

Our results show that in a total of 134,834 treatments 207 coagulations of the ECC occurred, i.e. 1.5/1000 treatments. In total of 166 patients with coagulation events, the majority were male, diabetic, with 69.8 years, in HDF over 4 years, with a AVF, and with heparin as anticoagulant. It should be noted that on average we have about 10% anticoagulated patients. We observed that when assessing the dialyser status, 72% had clean dialysers and up to 10% clotted fibres. The "coagulation time" measured had a mean time of about 12 minutes. We observed an increase in the number of events but without significance ($p > 0.193$). We believed that this was a result of the improvement in the registration. The overall mean heparin dosage decreased from an average of 93 IU/kg in 2012 to 67.5 IU/kg in 2017 ($p < 0.001$). It should be noted that these results are in agreement with the evidenced practice, since the majority of the patients continue to use unfractionated heparin, and few are anticoagulated.

Conclusion

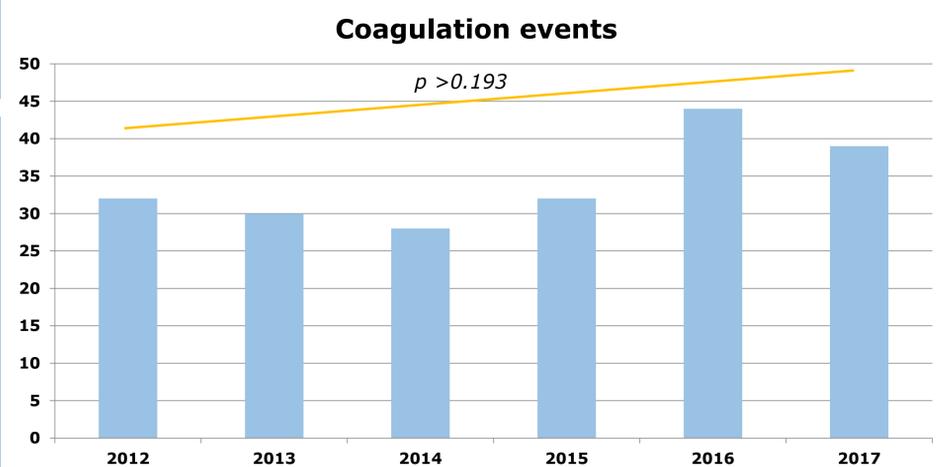
Our analysis of the data showed that the prescribed doses of heparin decreased significantly over the time analysed, due to the individualized method applied. The nursing team has the role of monitoring the ECC, but can actively contribute to the best dosage for the patient. With active nursing involvement, it was possible to reduce the dose of heparin without significantly increasing coagulation events. We have the perception that two patients with the same weight probably have different doses of heparin, but without a pre-defined rational. We can conclude that more research is needed regarding heparinization in haemodiafiltration.

References

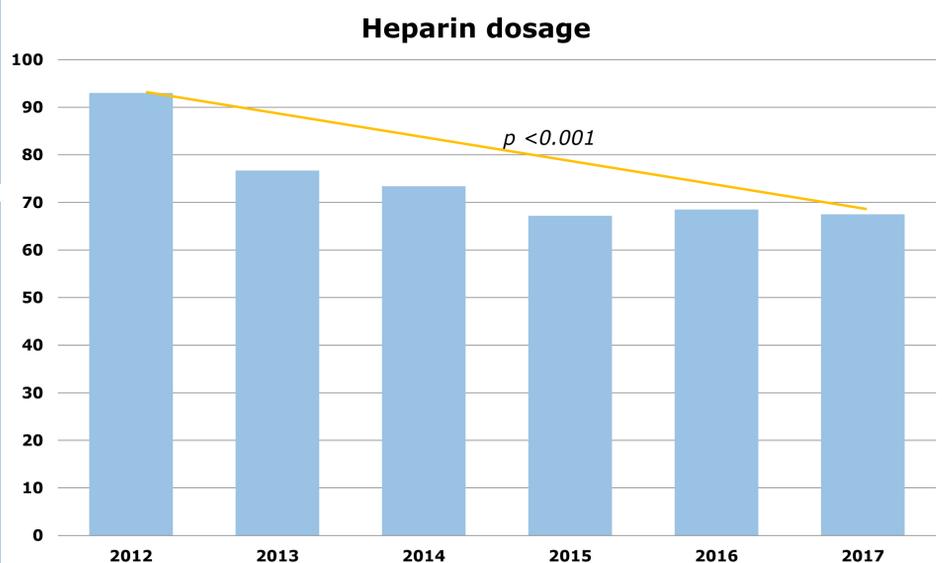
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	N	%
Age (mean, years)	69.8	
Time in HD (mean in months)	51.5	
Male	115	69.3
Diabetic	92	55.4
Haemodiafiltration (HDF)	133	80.1
Vascular Access		
Arteriovenous Fistula (AVF)	87	52.4
Arteriovenous Graft (AVG)	12	7.2
Central Venous Catheter (CVC)	67	40.4
Anticoagulation		
Unfractionated Heparin	136	82.0
Low molecular weight heparin (LMWH)	14	8.4
Heparin free	16	9.6
Medication		
Oral Anticoagulation	18	10.8
Antiplatelet Agents	91	54.8

Resume of the patients with coagulation events



Evolution of the coagulation events between 2012-2017



Evolution of the mean heparin dose (IU/Kg) between 2012-2017