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P255 -Anticoagulation on haemodialysis: Switching from Tinzaparin to Dalteparin

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Introduction

To reduce the chance of the haemodialysis (HD) circuit clotting, patients usually receive intravenous anticoagulant at the start of the session. Low molecular weight heparin (LMWH) is preferred to unfractionated heparin [1], and our unit uses tinzaparin. An alternative LMWH, dalteparin, is cheaper; however little data exists to guide conversion from one LMWH to another and differences exist in molecular weight and half life making accumulation and over-anticoagulation possible. We performed a prospective study to assess achieved anticoagulant levels, clinical efficacy and safety of dalteparin compared with tinzaparin.

Methods

Two shifts of HD patients were included. Those receiving warfarin or an anticoagulant other than tinzaparin were excluded. Patients received their usual dose of tinzaparin for 2 dialysis sessions following a 1 day gap and dalteparin for a further 2 sessions the next week, following a 1 day gap. Dalteparin was dosed according to weight and available syringe size: (>50kg received 5000units; <50kg received 2500units). Anti-Xa levels were measured at 0 (T0), 1 (T1) and 4 (T4) hours from the start of HD to assess LMWH activity. Each patient therefore had 2 sets of anti-Xa levels relating to tinzaparin, and 2 relating to dalteparin. We aimed for target anti-Xa levels of 0.4 – 0.75 at T1 and <0.4 at T4 [2]. Any unexpected clinical events during dialysis were recorded, including bleeding.

Results

There were 42 patients attending 2 HD shifts at the time of the study. Eleven patients were excluded: 4 were taking warfarin; 4 already receiving dalteparin; 2 received unfractionated heparin; 1 patient was an in-patient during the study period. No anti-Xa levels were sent for 3 patients. Of the remaining 28 patients, 27 received 5000U dalteparin per session. No patients required a second dose for circuit clotting. There was no difference in baseline anti-Xa levels between groups.

Average anti-Xa levels at T1 and T4 were significantly higher for dalteparin compared with tinzaparin (T1 anti-Xa dalteparin 0.71 vs tinzaparin 0.50, p = 0<0.01; T4 mean dalteparin anti-Xa 0.29 vs tinzaparin 0.18, p<0.01) (figure 1). 8 patients had anti-Xa levels above target at T1 post-dalteparin (0.77-1.13) and 6 were confirmed on repeat testing. These patients weighed less and included all 3 patients between 50 and 60Kg, despite there being no clear relationship between dalteparin dose/Kg and anti-Xa level. Only 3 patients were above range at T1 after tinzaparin. There were no significant adverse events. There were no bleeding or clotting events.

Conclusion

Dalteparin led to higher anti-Xa levels at 1 and 4 hours post-dose. Whilst statistically significant there were no bleeding complications and clinical significance unclear. This did not appear to be clearly weight-related, however it may be appropriate to consider adjusting weight cut-offs for dalteparin dosing. There was no

accumulation between sessions and no adverse events. Overall dalteparin appears effective and our unit plans to switch.