ADMINISTRATION OF FRAGMIN

Summary

- *St George policy to avoid use in dialysis patients*
- *Aim to provide anticoagulation in haemodialysis patients who are unable to use unfractionated heparin.*
- *Given via the arterial extracorporeal circuit bloodline as ordered by medical staff or as a vascath lock.*
    - *Dialysis < 4 hours: Single bolus dose of 2500 International Units or 5000 International Units at the start of dialysis (dose 30-40 International Units/kg)*
    - *Dialysis > 4 hours: Bolus dose at the start as per body weight (2500-5000 International Units) then a mid dialysis dose of 10-15 International Units/kg.*
- *Care to be taken with drug interactions which may enhance or reduce the anticoagulant effect of Fragmin.*

***Note**: It is the St George Renal Department policy that Fragmin be avoided in the management of dialysis patients.*

Cross References

Medication Handling in NSW Public Hospitals PD_2007 077

Medications – Intravenous Medications Therapy and Additives – SGSHHS CLIN115

Vascath – Instillation of Anticoagulant / Antibiotic Lock CHN_CLIN_023

Background Literature

Low-molecular-weight heparin (LMWH) preparation is an alternative form of anticoagulation used during haemodialysis to prevent the activation of the coagulation process during the procedure. LMWH are less likely to induce HIT type 2. There are several LMWH preparations available, they are not interchangeable. LMWH has a reduced inhibition of thrombin compared to unfractionated heparin (Fischer, 2007). If monitoring is required “anti-factor

Xa activity needs to be measured, while aPTT and ACT are not reliable" (Fischer, 2007, p. 185) Should there be a need to measure anti-factor Xa activity, it is measured from the venous line of the extracorporeal circuit with >0.5 International Units/ml being the recommended level (Fischer, 2007, p. 184).

Indications: Ulcerative conditions showing a tendency to haemorrhage, severe coagulation disorder, septic endocarditis. Thrombocytopenia (HIT type 2)

Aim: to provide anti-coagulant therapy on haemodialysis for patients unable to receive heparin.

Administration: Given via arterial bloodline. As with all IV medications Fragmin must be checked with another registered nurse as per hospital medication policy.

Adverse Reactions: allergic reactions such as urticaria, anaphylaxis, hypotension, fever, pruritus and bullous erruption, skin necrosis have rarely been observed.

Note on thrombocytopenia type 2 (HIT):
Where HIT is likely to be present all applications of heparin must be stopped, LMWH must also be avoided; although LMWH produce less HIT antibodies than unfractionated heparin (UFH), there is a high rate of cross-reactivity once UFH has induced HIT antibody formation and there is active HIT (European Best Practice Guidelines, 2002; Fischer, 2007; "MIMS Online," 2011). In active HIT, anticoagulation is mandatory to prevent life threatening thrombus formation so alternative anticoagulation is required such as danaparoid (European Best Practice Guidelines, 2002; Fischer, 2007).

Dosage

Dialysis <4 hrs	Single bolus injection of 2500 *International Units* or 5000 *International Units* at the start of dialysis (dose 30-40 *International Units* /kg)
Dialysis >4hrs	Bolus dose at start as per body weight (2500-5000 *International Units*) then mid dialysis dose of 10-15 *International Units* /kg

Interactions:

1. Enhancement of anticoagulant effect by thrombolytic agents, aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs) with effects on platelets, vitamin K antagonists, dipyridamole, dextran, sulfinpyrazone, probenecid, ethacrynic acid and cytostatics. However, unless specifically contraindicated, patients with unstable coronary artery disease (unstable angina and non-ST-elevation myocardial infarction), should also receive oral low dose aspirin ("MIMS Online," 2011).
2. Reduction of anticoagulant effect by antihistamines, digitalis glycosides, tetracycline and ascorbic acid.

NSAIDs and aspirin analgesic/ anti-inflammatory doses reduce the production of vasodilatatory prostaglandins. These effects reduce renal blood flow and renal excretion necessitating particular care to be taken when administering dalteparin concomitantly with NSAIDs or high dose aspirin in patients with renal failur ("MIMS Online," 2011).

References

European Best Practice Guidelines. (2002). Haemodialysis and prevention of system clotting. *Nephrology Dialysis and Transplantation, 17*(7), 63-71.

Fischer, K.-G. (2007). Essentials of anticoagulation in hemodialysis. [Review]. *Hemodialysis International, 11*(2), 178-189.

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