



Practice Performance, Improvement and Administration

LOWER HEPARIN DOSE REQUIRED IN THERAPEUTIC HYPOTHERMIA

Poster Contributions

Poster Sessions, Expo North

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Session Title: Improving Outcomes in Cardiac Arrest and Resuscitation

Abstract Category: 22. Performance Improvement

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Background: Therapeutic hypothermia (TH) improves neurologically favorable survival after cardiac arrest. When used in TH patients, standard IV heparin (UFH) dosing frequently results in excessively elevated activated partial thromboplastin time (aPTT). The aim of this study is to evaluate UFH dosing in patients undergoing TH.

Methods: We retrospectively identified 156 consecutive patients treated with TH from 2005-2011, including 68 (44%) who received IV UFH for 6 hours or greater during TH. APTT and UFH dose with corresponding core temperature were analyzed every 6 hours until a therapeutic aPTT was obtained, then daily up to 24 hours after completion of TH. A linear model was derived to predict aPTT at doses of 6, 12 and 18 units/kg/hr at $\leq 33^\circ\text{C}$, $33.1-35^\circ\text{C}$, and $>35^\circ\text{C}$.

Results: Mean age was 62 ± 12 years, weight 90 ± 22 kg, and 74% were male. Heparin dose requirement was lower at $\leq 35^\circ\text{C}$ compared to $>35^\circ\text{C}$. No difference in aPTT response was found between $\leq 33^\circ\text{C}$ and $33.1-35^\circ\text{C}$. An UFH dose of 12 units/kg/hr predicts an aPTT of 130 seconds at $\leq 35^\circ\text{C}$ and 77 seconds at $>35^\circ\text{C}$, respectively. An UFH dose of 6 units/kg/hr is predicted to maintain an aPTT of 55-90 seconds at $\leq 35^\circ\text{C}$ as does 12 units/kg/hr at $>35^\circ\text{C}$.

Conclusions: Standard UFH dosing can result in excessively elevated aPTT for TH patients during cooling ($\leq 35^\circ\text{C}$). TH patients require a 50% UFH dose reduction to maintain a therapeutic aPTT when $\leq 35^\circ\text{C}$. During core temperature changes close aPTT monitoring is recommended.

Predicted mean aPTT with UFH 6, 12, 18 units/kg/hr
at $\leq 35^\circ\text{C}$ and $> 35^\circ\text{C}$

