Low Dose 4-Factor Prothrombin Complex Concentrate in Reversal of Xa Inhibitors in a Neuro ICU

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There is no FDA-approved reversal agent for Xa inhibitors, however 4-factor prothrombin complex concentrate (4PCC) is used off-label. A dose of 50 units/kg is commonly cited in the literature. This study evaluated the effectiveness and outcomes of 4PCC 35 units/kg in Neuro ICU patients requiring reversal of Xa inhibitors.

This IRB approved, single center, retrospective cohort study evaluated patients admitted May 2013 – February 2016 to the NSICU of a level-1 trauma center. Patients were ≥ 18 yr, received a Xa inhibitor near time of admission, had a major hemorrhagic event, and received 4PCC ~ 35 units/kg per institution protocol. Pregnant and incarcerated patients were excluded. The primary outcome was assessed using computed tomography (CT) to evaluate bleeding progression. Hemostasis was defined as a stable radiographic image performed after administration of 4PCC. Data collection included: patient demographics, admission APACHE and GCS scores, hemorrhage type, 4PCC dose, ICU and hospital LOS, disposition, and adverse events.

A total of 38 patients were included: The mean (SD) age was 72.9 (13.9) yrs and 53% were male. Twenty patients presented with a TBI, 10 with a SAH, and 8 with an ICH. Median (IQR) admission APACHE II score was 17 (IQR: 13-25) and GCS was 14.5 (IQR: 11-15). Twenty-nine patients were on rivaroxaban and 9 patients were on apixaban primarily for atrial fibrillation (73.7%). The median (IQR) 4PCC dose was 32.8 (IQR: 27.9-35.1) units/kg. Repeat CT showed no progression of the bleed in 33 (86.8%) patients. Three of the 5 patients without cessation of bleeding received a 2nd dose, all with cessation of bleeding. Median (IQR) ICU LOS was 2.1 (1.5-6.1) and hospital LOS was 9 (3.8-15.2) days. Two died; 1 due to infection and 1 due to family withdrawal of care. Fourteen (36.8%) were discharged to a SNF/Rehab, 13 (34.2%) to home, 5 to hospice, and 4 to LTAC.

Use of 4PCC 35 units/kg was associated with cessation of bleeding, clinically and radiologically, in 86.8% of patients taking Xa inhibitors. Prospective randomized studies are needed.