GUIDELINE FOR CARE OF PATIENTS WITH POTENTIAL OR ACTUAL TBI ON ANTICOAGULATION

OBJECTIVES:

1. Provide guidance on observation for TBI in patients on anticoagulation.
2. Provide a guideline for treatment of patients on anticoagulation with TBI or potentially life threatening bleeding.

Background:

Patients on anticoagulation who suffer traumatic injury or surgery are at risk for delayed hemorrhage and life threatening bleeding even with otherwise minor trauma. These patients require a heightened level of awareness and may require additional testing or monitoring. Co-morbid conditions such as alcoholism, hypertension, and advanced age may disproportionally increase the risk of delayed or life threatening hemorrhages. Newer oral anticoagulants (NOA's) present a particular challenge since little is known regarding their reversal in trauma.

Recommendations:

* All times are from T-O (time of injury) unless unable to be determined then use time of arrival

Patients with TBI/blow to head with + LOC on warfarin or therapeutic heparin/LMWH:

- **Initial CT is positive and INR >1.5 (warfarin), PTT > 50 (heparin), Factor Xa <40% (LMWH, Arixtra)**
  - Hold medication
  - Observe patient in hospital at least 24hrs
  - Acutely reverse anticoagulation
    - Warfarin (see procedure PROC_CM_A-30F)
      - Give Vitamin K (PO: 2.5-5 mg, IV: 5-10 mg in 50 mL 0.9% NaCl *infused over 30 min*)
      - Give PCC (KCentra®)
        - INR: 2-4: 25 units/kg (max dose: 2500 units)
        - INR: 4-6: 35 units/kg (max dose: 3500 units)
        - INR: >6: 50 units/kg (max dose: 5000 units)
      - Give plasma (e.g. FFP) only if PCC not available

        - Recheck INR 1 hour later; if still > 1.5 – consider other causes of increased INR. Repeat dosing of Kcentra is not currently recommended by the prescribing information; however, repeat doses may be considered per clinical judgment.
    - Heparin (see procedure PROC_CM_A-30A)
        - Give protamine (see PROC_CM_A-30A for dosing)
        - Recheck PTT 30-45 minutes after initial protamine dose to determine need for additional protamine dosing
        - Recheck PTT every 4-6 hours for the next 24 hours
    - LMWH (see procedure PROC_CM_A-30E)
        - Give protamine (see procedure PROC_CM_A-30E for dosing)
        - Monitor Factor Xa over the following 12-24 hours
    - Arixtra (fondaparinux; see procedure PROC_CM_A-30D)
        - Give FeiBA® (25-50 units/kg, maximum rate 2 units/kg/min) if emergent reversal required **(thrombosis risk; Recommendation based on limited and non-clinical data)**
        - Monitor Factor Xa over the following 24-36 hours
- Obtain repeat CT (at 6 hrs and at 24hrs)

– **Initial CT is negative and INR >1.5 (warfarin), PTT > 50 (heparin), or Factor Xa <40% (LMWH, Arixtra)**

- Hold medication
- Observe patient in hospital at least 6 hrs
- Repeat CT in 12-24hrs. (6 hrs if significant injury)
- If INR >10, hold warfarin and give vitamin K 2.5-5 mg PO (consider 24hrs observation).

Patients with TBI/blow to head With + LOC on Oral anticoagulants (NOA's)and antiplatelet therapy :

– **Initial CT is positive**

- Hold medication
- *Observe patient in hospital at least 24 hrs (These drugs have long half-lives)*
- Acutely reverse anticoagulation (see procedures PROC_CM_A-30B Dabigatran, and PROC_CM_A-30C Rivaroxaban)
    - For Dabigatran (Pradaxa: see procedure PROC_CM_A-30B)
        - If patient stable (does not require emergent OR) ***consider*** Hemodialysis for Dagibatran **(Recommendation based on limited and non-clinical data)**
        - Consider STAT Hematology consult
        - Give idarucizumab (Praxbind) 5g IV once (two 50mL boluses each containing 2.5g given less than 15 minutes apart). Additional dose may be required after 12 hours if bleeding and coagulation studies are elevated.
    - For Rivaroxaban (Xarelto) or Apixaban (Eliquis: see procedure PROC_CM_A-30C)
        - If patient stable (does not require emergent OR) ***consider***: Plasmapheresis for Rivaroxaban **(Recommendation based on professional opinion, no clinical data)**
        - Consider STAT Hematology consult
        - Give Kcentra (50 units/kg, maximum 5,000 units) if emergent reversal required **(thrombosis risk; Recommendation based on limited and non-clinical data)**
- Obtain repeat CT (6 hrs and 24hrs)

- **Initial CT is negative and thrombin time (TT) > 30 sec (Dabigatran) or INR >1.5 (Rivaroxaban)**
    - Hold medication
    - <u>*Observe patient in hospital at least 24 hrs (These drugs have long half-lives)*</u>
    - Repeat CT in 12-24 hrs)
    - Consider dialysis for Dabigatran if significant trauma (i.e. extensive bruising , lacerations, LOC) with high potential for significant bleeding
    - If emergent reversal required **(thrombosis risk; Recommendation based on limited and non-clinical data)**, consider:
        - Dabigatran: Idarucizumab (Praxbind) 5g IV once (two 50mL boluses each containing 2.5g given less than 15 minutes apart). Additional dose may be required after 12 hours if bleeding and coagulation studies are elevated.
        - Rivaroxaban (Xarelto) or Apixaban (Eliquis): Kcentra (50 units/kg, maximum 5000 units)

References

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Levi, M., Eerenberg, E., & Kamphuisen, P. W. (2011). Bleeding risk and reversal strategies for old and new anticoagulants and antiplatelet agents. Journal of Thrombosis and Haemostasis : JTH, 9(9), 1705-1712.

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