

Rivaroxaban (Xarelto®) Monitoring, Perioperative Management and Reversal

Last updated February 2012

Laboratory Monitoring of Rivaroxaban

- Routine lab monitoring is NOT recommended
- In certain clinical situations, lab testing may be indicated including:
 1. Suspected drug failure (thrombosis while on rivaroxaban)
 2. Major/life-threatening bleeding while on rivaroxaban
 3. Urgent/emergent surgery or invasive procedure while on rivaroxaban
- Lab testing can be considered in patients of weight extreme or with renal insufficiency
- ALL coagulation tests must be interpreted with caution for patients on rivaroxaban

Laboratory Tests available at WVUH for documenting rivaroxaban effect

Prothrombin Time (PT/INR)

- USE WITH CAUTION: A PT outside the reference range suggests presence of the drug
- WVUH labs has NOT studied the effects of rivaroxaban on our PT/INR

Anti-Xa Level

- Order in Merlin as “ANTI-XA HEPARIN LEVEL”
- This can only detect presence of drug
- WVUH has not validated this test for rivaroxaban measurement

PT, PTT and Thrombin time are available 24/7. However, anti-Xa is only available during day shifts M-F and turnaround time may be several hours.

Perioperative Management - Holding for Procedures

Unclear: consideration should be given to half-life ($t_{1/2}$) - normal renal function.

- $t_{1/2}$ in adult patients = 5-9 hours
- $t_{1/2}$ in elderly patients = 11-13 hours

Recommendation: 24-48 hours - normal renal function.

Acute Overdose of Rivaroxaban

- Activated charcoal may be considered, but no data are available at this time.
- Consider giving activated charcoal 1-2 hours post-overdose before intestinal absorption occurs

Bleeding Management: Reversal Options (If patient has significant bleeding or requires urgent procedure.)

Treatment options

- Prothrombin complex concentrate (PCC) - Bebulin® - 25-50 units/kg
- In a small study of 6 healthy males, this dose immediately and completely reversed the effect after administration of 20 mg twice daily for 2.5 days. The agent used was not available in this country and differed in composition from Bebulin®

Other supportive measures

- Fresh frozen plasma (FFP) 5-10 mL/kg: There are conflicting opinions on the efficacy of FFP in rivaroxaban overdose.
- Dialysis is NOT effective for drug removal.

Rivaroxaban (Xarelto®) Monitoring, Perioperative Management and Reversal

Last updated February 2012

Life-threatening bleeding - potential benefit

- Recombinant activated factor VII (rFVIIa) (NovoSeven®) - dosing unclear
 - Consider 40 mcg/kg. May repeat. Higher dose of 90 mcg/kg can be considered.

References

1. DeLoughery TG. Practical aspects of the oral new anticoagulants. *Am J Hematol*. 2011; 86: 586-90.
2. Eerenberg ES, Kamphuisen PW, Sijpkens MK et al. Reversal of rivaroxaban and dabigatran by prothrombin complex concentrate: A randomized, placebo-controlled, crossover study in healthy subjects. *Circulation*. 2011; 124: 1573-9.
3. Sartori MT, Imbergamo S, Zanon E et al. Hemostatic effect of recombinant activated Factor VII in critical bleeding: Clinical experience of a single center. *Clin Appl Thromb Hemost*. 2009; 15: 628-35.
4. Samama MM, Guinet C. Laboratory assessment of new anticoagulants. *Clin Chem Lab Med*. 2011; 49(5): 761-72.
5. Harenberg J, Kramer R, Giese C et al. Determination of rivaroxaban by different factor Xa specific chromogenic substrate assays: Reduction of interassay variability. *J Thromb Thrombolysis*. 2011; 32: 267-71.
6. Harenberg J, Marx S, Kramer R et al. Determination of an international sensitivity index of thromboplastin reagents using a WHO thromboplastin as calibrator for plasma spiked with rivaroxaban. *Blood Coagul Fibrinolysis*. 2011; PMID: 21986465.

PNT Approved 2/12