ICU
MANAGEMENT & PRACTICE

Anticoagulants: Tests for Checking Bleeding Unreliable?

A new study in *Annals of Emergency Medicine* says coagulation tests used by physicians to check for the side effect of bleeding in patients taking blood thinners such as Xarelto® (rivaroxaban) and Eliquis® (apixaban) may not be reliable. The study found that in cases reported to poison centres, the routine labs used to monitor for clotting factors, including prothrombin time (PT), PTT or INR commonly ordered to help diagnose internal bleeding may be elevated in a minority of cases, but appear unreliable to measure the risk of internal bleeding in patients.

“Blood thinners are helpful drugs and we do not want people to stop taking them,” says Henry Spiller, MS, D.ABAT, a co-author of the study, toxicologist, and director of the Central Ohio Poison Center at Nationwide Children’s Hospital. “We may need to get better about how we monitor patients on these drugs.”

Data from more than 800 hospitals and eight regional poison centres covering nine states were used for this retrospective study. Of the 223 patients included in the study, bleeding was reported in only 15 patients (7 percent): 11 rivaroxaban and 4 apixaban. Coagulation tests were normal in most patients with bleeding (PT 83 percent, PTT 83 percent and INR 44 percent).

According to the research team, PT was shown to be elevated in volunteer studies with rivaroxaban and also elevated in massive overdose. However, results of the PT after use of blood thinners varied with different components. The effects of medications on PTT are short lived and varies based on the reagents used. In patients with bleeding, PT and PTT were elevated in 1 of 4 with rivaroxaban and none with apixaban. Without specific clarification of methodology and reagent use, the researchers say, the PT and PTT may not reliably predict risk of bleeding after rivaroxaban or apixaban ingestion.

The measurement of INR with rivaroxaban has also been questioned because the INR does not correct for the variations in PT based on which reagent was used. As shown in volunteer studies, the INR was elevated in only 21 percent of patients tested with rivaroxaban and in no patients with apixaban. In patients with bleeding, the INR was elevated in 5 of 8 with rivaroxaban but in none with apixaban. Without specific clarification of methodology and reagent use, the INR may also be an unreliable test after rivaroxaban or apixaban ingestion. In addition, the use of activated clotting time appears to be insensitive after Xa inhibitor use, says the research team.

“One way to overcome the variation in these tests is to use anti-factor Xa chromogenic assays to measure Xa plasma concentrations; however these are not widely available,” Spiller points out. “And a potential drawback with measuring anti-factor Xa concentrations and plasma rivaroxaban and apixaban concentrations is that the turnaround time for results may be too long to guide a treatment plan.”

Source and image credit: Nationwide Children's Hospital

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