INTRODUCTION

Dabigatran (Pradaxa®) and rivaroxaban (Xarelto®), newer anticoagulants, have several advantages over warfarin, including more predictable pharmacokinetic profiles and no need to regularly monitor PT, PTT or INR1,2. Concerns have been raised about post-approval rates of bleeding and a lack of well-characterized reversal agents4,5. Various types of bleeding associated with these medications have been reported in the literature6,7.

OBJECTIVE

To further characterize the clinical presentation and outcomes of dabigatran and rivaroxaban overdoses and toxicity as an observational case series.

METHODS

This was a combination retrospective and prospective case series. Cases of dabigatran and rivaroxaban exposure reported to our poison control system from 1/1/17 to 5/12 were collected retrospectively; cases from 5/12 to 7/13 were collected prospectively. Misused cases and those with possible warfarin co-ingestion were excluded. Other cases of co-ingestion were included. Data for each case was collected by the poison information specialists and medical toxicologists on staff. Main data variables collected included demographics, outcome, disposition, nature of exposure, treatments received, vitals, and laboratory parameters.

RESULTS

57 total cases were identified, with 7 excluded, leaving 50 dabigatran and 12 rivaroxaban cases. Children age 12 or less accounted for 5 dabigatran and 2 rivaroxaban cases. Bleeding was reported in 15 dabigatran cases. Bleeding was reported in 5 rivaroxaban cases. None of the pediatric cases from either group had adverse outcomes or bleeding. Coagulation parameters were abnormal in many cases but did not correlate well with bleeding or outcomes.

DISCUSSION

As the use of dabigatran and rivaroxaban becomes more common, understanding how to identify and manage cases of toxicity or misuse of these medications is especially important. In our series, chronic dosing of these agents resulted in more episodes of bleeding than intentional overdoses or excess dosing and pediatric ingestions. Dabigatran and rivaroxaban induce dose dependent effects on coagulation studies but interact with these studies in a different manner from warfarin2,8-9. In our series, elevations in PT, PTT and INR corresponded to bleeding or coagulopathy, but did not correlate well with bleeding or outcomes.

CONCLUSIONS

This case series of dabigatran and rivaroxaban exposures demonstrated the greatest degree of risk of adverse events in patients chronically taking these medications. In our series, acute self-harm ingestions and accidental pediatric ingestions had few adverse effects, although massive overdose can lead to abnormal coagulation studies.

From our data, it did not appear that single low dose ingestions of either medication will lead to clinically significant bleeding in children or adults. It may be possible to effectively manage some low-dose acute intentional self-harm and most accidental ingestions of these medications (inception).