

Frequency of Coagulation Testing in Acetaminophen Overdose without Liver Injury

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Background

In acetaminophen (APAP) induced liver failure coagulation status assessed by the international normalized ratio (INR) is a key prognostic indicator. Some health care providers routinely obtain a “baseline” INR in all patients with APAP overdose. However, in patients without liver injury this test may lead to confusion. Both APAP itself (1-3) and N-acetylcysteine (NAC) treatment (4-7) have been linked to mild INR elevation in the absence of liver injury. Although the mechanism remains unclear, INR elevation appears to be delayed following peak APAP level (1).

Research Question

What proportion of acute APAP overdose patients with normal or near-normal aminotransferase (AT) values reported to a regional poison center (RPC) have coagulation testing performed, and how often do results influence treatment?

Methods

This was a retrospective review of acute exposure cases evaluated at a health care facility (HCF) and reported to a RPC between 1/1/11 and 12/31/13. Cases were included if they had detectable serum APAP, initial AT < 100 U/L, and age > 12 years. Patients with suspected anticoagulant exposure were excluded.

RPC records were reviewed for coingestants, NAC treatment, and lab values reported by the HCF.

If AT increased to > 100 U/L during hospitalization, coagulation testing was considered appropriate. The RPC only recommended coagulation testing of APAP overdose patients in the setting of liver injury (elevated alanine aminotransferase and/or aspartate aminotransferase).

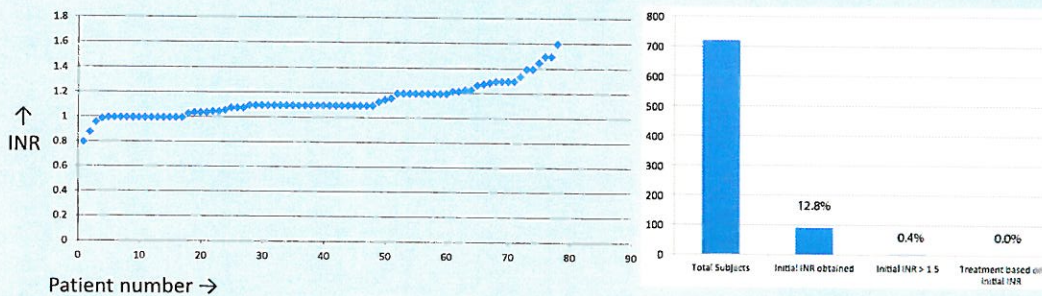


Figure 1: Scatter diagram of INRs in patients with numeric values reported to RPC (n = 78)

Results

720 RPC records met inclusion criteria.

HCFs reported that coagulation testing was done in 92 cases (12.8%).

In 11/92 cases results were reported to the RPC as “normal” without quantitative values.

In 3 cases only a protime (PT) or partial thromboplastin time (PTT) was provided.

Specific INR values were available in 78 cases with values ranging from 0.8 to 1.8.

INR was < 1.5 in 75/78 (96.2%) patients with INR values reported.

68/78 (87.2%) with INR values reported received NAC (57/68 or 83.8% by IV route).

7/78 had rising AT values during hospitalization that may have prompted INR testing.

No undeclared anticoagulant coingestants were discovered.

No changes in management based on INR results were documented.

Discussion

12.8% of patients followed by a single RPC for acute APAP overdose with initial AT < 100 U/L had coagulation testing performed, though in a small proportion of cases this may have been prompted by rising AT values. Coagulation results do not appear to have led to any changes in patient management.

This study has several limitations.

Because RPC specialists did not ask HCFs for coagulation results in the absence of liver injury, the number of patients who had testing performed is likely greater than reported. Time of INR determination was generally not provided to the RPC, so correlation with APAP levels or timing of NAC administration was not possible.

Conclusions

Guidelines recommending PT/INR determination only for specific indications such as documented liver injury might help to further reduce unnecessary testing and contain the costs of managing overdose patients.

References

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Figure 2: Frequency of INR testing without liver injury in this study

