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63. Non-APAP Containing Xenobiotics Associated with AST >1,000 U/L

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Background: Acetaminophen (APAP) commonly causes elevations in AST >1,000 U/L. The next most commonly implicated xenobiotics causing AST >1,000 are less clear.

Research question: What is the prevalence of non-APAP containing xenobiotics associated with AST >1,000 seen by medical toxicologists?

Methods: Using the search criteria “AST >1,000”, all cases entered into the Toxicology Investigators Consortium (ToxIC) database from May 1, 2012 to October 30, 2013 were reviewed. Four hundred sixty-two cases met these criteria. Two hundred sixty-three cases with an APAP containing xenobiotic as primary or secondary agent of exposure were excluded. Sixty-four cases where a xenobiotic was not specified, and another five cases that were deemed “unlikely tox related” were also excluded. Of the remaining 130 cases, there were 95 single-agent exposures and 35 multi-agent exposures. We limited our analysis to single agent exposures for the prevalence of different xenobiotics and the clinical outcomes.

Results: Ethanol was the primary xenobiotic in 52/95 (55 %) cases. Of these, 14 (27 %) developed metabolic acidosis (pH<7.2), 8 (15.3 %) developed hyperreflexia, myoclonus or clonus, 5 (9.6 %) developed acute kidney injury (AKI) (creatinine >2), and 3 (5.7 %) died. Opioids accounted for 9/95 (9 %) cases. AKI occurred in seven (78 %) opioid cases, rhabdomyolysis (CPK >1,000) in five (55 %), and death in two (22 %). Methamphetamine exposures comprised 7/95 (7 %) cases. Four (57 %) developed AKI and five (71 %) developed rhabdomyolysis. Mortality among this group was 14 %. Overall mortality among all single-agent non-APAP cases analyzed was 9 %. Other agents associated with death included rivaroxaban and valproic acid. Synthetic cathinones, carbamazepine, carisoprodol, acetazolamide, methimazole, risperidol, and black cohosh were also associated with AST >1,000.

Discussion: Ethanol was commonly associated with AST >1,000 in this series although this is not typical of ethanol-induced liver injury. The high prevalence AKI in the opioid and methamphetamine patients suggested development of multisystem failure. Prospective studies on patients with AST >1,000 would better characterize the mechanisms of these liver injuries.

Conclusion: Frequently abused xenobiotics including ethanol, opioids, and methamphetamine accounted for the most non-APAP associated AST >1,000 cases seen by medical toxicologists.