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Case Presentation: Lower Back Pain or Chronic Acetaminophen Overdose?

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Case Presentation: Lower Back Pain or Chronic Acetaminophen Overdose?

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Abstract:

Unintentional ingestions can pose a difficult challenge to diagnose in the setting of the Emergency Department. Many may present with vague symptoms that are not consistent with classic overdose prodromes. Many patients do not identify or disclose over the counter medications, such as analgesics, with which acute/chronic ingestion in large quantities can result in life threatening medical emergencies. Their underlying symptoms may also cloud their clinical picture, further complicating workup within the ED.

Introduction:

Acetaminophen is a readily available over the counter antipyretic and analgesic, which is absorbed rapidly with a peak plasma concentration at 1 hour and complete absorption at 4 hours post ingestion. Acetaminophen inhibits prostaglandin E2 synthesis and produces a cytotoxic metabolite NAPQI, which is cytotoxic by both depleting glutathione stores and binding to hepatocytes directly, thereby causing cell death. Complications of overdose include multi organ failure, cerebral edema, and death. Early intervention in Acetaminophen overdose is imperative to attain better outcomes.

Case Presentation:

A 39 y.o. female with history of non-traumatic cauda equina, HTN, hypothyroidism presented to the ED for evaluation of lower back pain. At the time of triage, her vital signs were stable. Per medical records, she was seen two months prior for caudal equina syndrome secondary to degenerative changes and was not deemed to be a surgical candidate. She was currently undergoing outpatient physical therapy, where she ambulated independently. Patient complained of generalized weakness with decreased sensation in bilateral lower extremities, however, denied any urinary or fecal incontinence. She also reported nontraumatic neck pain with tingling to all extremities. She endorsed taking synthroid, pantoprazole and "some over the counter pain meds". On exam she was slow to respond, however was AxOx3. Her cervical spine had paraspinous tenderness to palpation without midline pinpoint tenderness, step offs, or deformities. On neurological exam, patient had widespread decreased sensation from T4 distal, with muscle strength and DTRs within normal limits. POC glucose was determined to be 43 and 1 amp of D50 was initiated.

Case Presentation:

She progressively became hypotensive to 55/30, and therefore a 330cc/kg fluid bolus through pressure bags and peripheral levothep was initiated to obtain a map goal of >65. Patient was sent for CT head which was negative. A CT of the chest and abdomen was obtained to investigate an underlying infectious source, which was also negative. CT angiogram of her chest was negative for aortic dissection and pulmonary embolus. Her labs were notable for a lactate of 9.5, d-dimer of 11.82, and new onset renal failure with a creatinine of 2.37. A bicarbonate drip was started considering her lactic acidosis. On speaking with patient's boyfriend, it was revealed she had been consuming wine and sleeping over the last 2 days. He denied any falls or drug use. Toxicology panel resulted with a Tylenol over 100 and trace alcohol. Hepatic panel was demonstrative of acute liver failure. NJ Poison Control was contacted, and patient was initiated on NAC. Critical Care and Hepatology were contacted, as patient's labs reflected fulminant liver failure. In addition, she developed acute jaundice, scleral icterus and asterixis on exam. Her vitals remained stable with vasopressor support titrated accordingly. Her MELD score was determined to be 32 with a 60% mortality probability. Thiamine, BMP, LFT's and coagulation factors were monitored while patient was stabilized for transfer. On medical record follow up, patient was treated with supportive care and did not require liver transplant. Her LFT's normalized and she was followed outpatient for further evaluation.

Discussion:

Unintentional Acetaminophen overdose can be difficult to detect in the Emergency Department as it may present with vague symptoms as nausea, vomiting, malaise, diaphoresis or may be asymptomatic in its early stages. Acetaminophen overdose can be life threatening- leading to multi organ system failure, SIRS, seizures, coma or death. One may not be clued into an overdose, as patients fail to mention over the counter medication use or may take combination prescriptions such as percocet, which unknowingly contain acetaminophen. Overdose leading to fulminant liver failure can result in metabolic acidosis, coagulopathy, encephalopathy, and renal injury as a result of toxic metabolite formation, which was seen in this case. It is helpful to check for co-ingestions and perform a full toxicology workup as it is common. Higher mortality is seen in coingestion with isoniazid and alcohol, patients who are malnourished, and in children. LFTs are used to determine the extent of end organ damage.

Discussion continued:

Acute and chronic acetaminophen ingestions are managed differently and therefore it is important to identify the time and amount of ingestion. Acute ingestions require 150 mg/kg ingestion before toxicity occurs, with serum concentrations most accurate 4 hours post-ingestion. In these cases a nomogram can be used using weight and route of acetaminophen administration to determine the utility in N-acetylcysteine (NAC) implementation in acute overdose. In chronic overdoses, the nomogram does not have as much utility, and it may be more beneficial to follow response to treatment based on serum levels and LFTs. Regardless, it is recommended that in any overdose, acute or chronic, if the AST > 50, NAC should be initiated regardless of serum Acetaminophen level. NAC, or N-acetylcysteine is readily available in most Emergency Departments, and detoxifies by decreasing production of NAPQI. It is available in both PO and IV form, however the IV route is preferred given ease of use and clinical side GI effects which may limit its absorption in the clinical setting. IV does carry with it a small risk of rash, flushing, pruritus and hypotension (<1%). Regardless of NAC protocol (72h po vs 21 hr IV), termination is achieved when serum acetaminophen concentration <10, and the AST has normalized.

Conclusions:

Acetaminophen overdose, especially unintentional is potentially lethal, and may go unnoticed in a clinical setting until its late stages. When evaluating a patient with suspected overdose it is important to address time of ingestion, amount taken, possible co-ingestions and history of hepatic pathology. It is especially important to obtain serum levels, LFTs, coagulation profiles, BMPs and full toxicology panels for further evaluation. Early contact with Poison Control is crucial in determining other considerations and initiation of NAC protocol to best improve outcomes of overdose patient's in the clinical setting. Close monitoring of vital signs and physical exam is of utmost importance to provide supportive care during this time.

References: Available on request