

### Question 43 – Week of April 25

A 45 year old female presents to the emergency room complaining of acute right upper quadrant pain and jaundice. She regularly consumes 3-4 alcoholic drinks per day. Two weeks ago she fell hurting her back and has since been taking 8-10 extra-strength Tylenol daily. Laboratory studies demonstrate AST and ALT of 10,000 and 5,000 IU/ml. The bilirubin is 4.5 mg/dl and INR is normal.

Which of the following is correct?

- A. N-acetylcysteine does not need to be given since her INR is normal.
- B. NAPQI is increased because chronic alcohol consumption in this patient has reduced the metabolism of this toxic intermediate.
- C. The elevation in serum liver AST to >5000 IU/L is highly suggestive that the patient will develop acute liver failure and require a liver transplant.
- D. A liver biopsy would demonstrate central lobular, zone 3, necrosis. However, this will eventually return to normal with no evidence of fibrosis following this acute episode.

**Answer: D**

Acetaminophen is the most common cause of acute liver failure in the United States. All suspected cases of acetaminophen toxicity should be treated with N-acetylcysteine. Toxicity occurs secondary to the conversion of acetaminophen to a toxic metabolite, NAPQI. This product is subsequently detoxified by glutathione. Processes which increase the production of NAPQI will increase the risk of acetaminophen toxicity. These processes include the use of agents which cause proliferation of P450 including certain anti-seizure medications, and ethanol. Toxicity in this patient is more related to chronic alcohol use increasing the production of NAPQI and not the secondary detoxification of NAPQI. Patients with acetaminophen hepatotoxicity frequently have very high levels of serum aminotransferases. However, the level of aminotransferase elevation is not linked associated with an increased risk to develop acute liver failure. Most patients recover from acetaminophen induced acute liver failure. Such persons recover completely with no long lasting liver injury and normal liver histology.