Interesting Presentation of Autoimmune Hepatitis Superimposed With Acetaminophen Toxicity

Rachel Cutting, OMS-IV, Lisa Carpenter, D.O.
Department of Internal Medicine, Southern Maine Health Care, Biddeford, ME

Background

- Idiopathic Autoimmune Hepatitis (IAH) is a rare form of chronic hepatitis with a strong predominance in females in bimodal age distribution between 10-20 years or 40-60 years\(^1\).
- The etiology of IAH is unclear, but it’s believed to be autoimmune process as it concurrently presents with other autoimmune diseases such as Type 1 Diabetes or Rheumatoid Arthritis\(^2\).
- Minocycline, nitrofurantoin, hydralazine, statins, infliximab, and etanercept have been found to be implicated in causing Drug-Induced Autoimmune Like Hepatitis (DI-ALH)\(^3\).
- Distinguishing DI-ALH from IAH is quite challenging because its presentation, diagnostic test results (with positive autoimmune serology), and liver biopsy features can closely resemble IAH\(^4\).
- Acetaminophen hepatotoxicity typically presents with fulminant liver failure with elevation of INR (coagulopathy), liver enzyme levels greater than 1000 U/L, and encephalopathy\(^6\).

Case Presentation

HPI

- A 75 y/o F with lumbar retinopathy, HTN, and Type II DM presents to her PCP for routine lab tests.
- Her AST and ALT are elevated at 231 and 221, respectively.
- Upon questioning, patient admits to taking Tylenol up to 3900 mg daily for the past two years. She was asymptomatic.
- At the ED, her acetaminophen was elevated at 7.6, and she was treated with 20-hour IV N-Acetylcysteine (NAC). Her liver enzymes normalized upon discharge.
- A week later, patient returns with new onset profound fatigue and generalized pruritis.

Lab Results, Imaging, and Biopsy

- Her lab findings now show AST and ALT elevated at 143 and 171, respectively, INR 1.3, positive Antinuclear Antibody (ANA 1:5120), positive p-ANCA antibody, positive Smooth Muscle Antibody (AMA), upper limit of normal serum IgG.
- Other labs including GGT, Anti-Mitochondrial Antibody, Alkaline phosphatase, Bilirubin, and Hepatitis Panel were all negative.
- Abdominal US shows hepatomegaly.
- US guided Biopsy of the liver shows inflammatory infiltrate predominantly consisted of small lymphocytes and plasma cells (Figure 1) as well as interface hepatitis with bridging fibrosis (Figure 2).

Histopathology Findings

**Figure 1.** Marked Interface activity with inflammation dominated by plasma cells (black arrows)\(^4\)

**Figure 2.** Fibrosis with early bringing formation\(^5\)

Discussion

- Our case was interesting in that our patient was beyond the typical bimodal age associated with IAH. In addition, she did not have any other autoimmune conditions.
- Acetaminophen hepatotoxicity is associated with fulminant liver failure but has not been yet found to be implicated in causing DI-ALH. However, one can theorize that chronic use of acetaminophen may cause chronic inflammation therefore DI-ALH.
- In our case, it is unclear if her chronic acetaminophen use caused DI-ALH or served as a trigger for IAH.
- DI-ALH is typically treated with discontinuation of the drug with complete resolution of the condition, although the recovery can be delayed and may prompt the use of corticosteroids\(^6\).

Conclusion

- IAH and DI-ALH have overlapping features in clinical presentation, immunological, and histologic findings. Currently, the only way to distinguish DI-ALH from IAH is the presence of relapse after discontinuation of offending drug or corticosteroids\(^7\).
- In conclusion, there should be a better diagnostic criteria that may help distinguish the phenotype of DI-ALH from IAH.