Delayed Severe Drug Induced Cholestasis After Anabolic Steroids Exposure

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Introduction

Anabolic steroids have become renowned as an enhancement tool for athletic performance and muscle development (1). One modification of testosterone is through alkylation of the C-17 position to allow for oral administration and that formula has been implicated in cases of certain liver injuries that are less common in esterified testosterones. These modified formulations include products such as danazol, methyltestosterone and stanazol (2). Testosterone therapy has been linked to distinctive form of acute cholestasis that generally arises within 1 to 4 months of therapy initiation but may be delayed to as long as 6 to 24 months (3). We are presenting a unique case where acute cholestasis occurred five weeks after discontinuation of Stanazol use of one-week.

Case report

A 20-year-old African American male without significant past medical history presented to the emergency department with jaundice, mild nausea, and generalized pruritis for four days. The patient stated that he had several episodes of non-bilious vomiting during this time. All his symptoms have been progressive and reports no prior incidence.

On social history, patient denied any illicit drug use or sexually transmitted infections but admitted to self-initiation of oral stanozolol 40 mg daily. The patient used this anabolic steroid for 7 days 5 weeks prior to his symptoms developing. He denied any other prescription drug use or tobacco use. He admitted to occasional alcohol use that did not exceed 1-2 beers a week.

Family history was negative for any liver disease including hepatitis, jaundice, cirrhosis, or malignancy.

Physical exam showed normal vital signs, mildly jaundiced well-nourished male with scleral icterus. His abdominal exam was benign without any hepatosplenomegaly; otherwise normal physical exam.
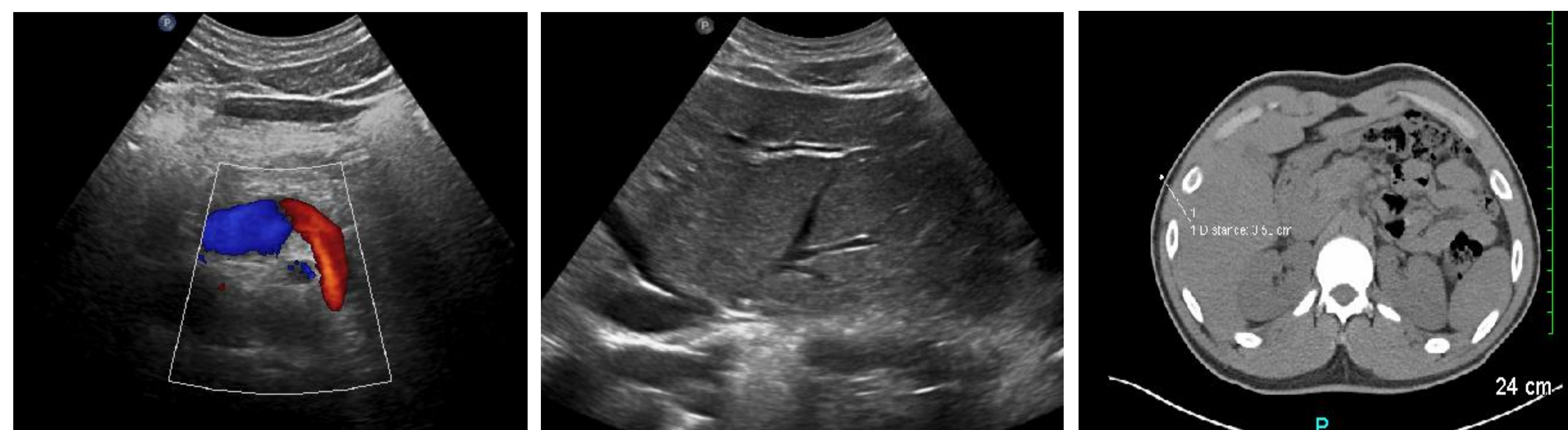

Figure 1, 2, and 3

Hospital Course

Initial complete blood count and basic metabolic panel were unremarkable. Liver function profile with ALT of 44 IU/L, AST of 72 IU/L, Alk Phos of 266 IU/L, T. Bili of 21.4 mg/Dl, and INR of 1.2. The rest of his labs were unremarkable except for mildly elevated ferritin levels at 669 ng/ML.

Initial workup including hepatitis A, B and C, HSV 1&2, CMV, HIV, EBV, Wilson's, hereditary hemochromatosis and autoimmune disorders were all negative. Imaging of the liver, gallbladder and the biliary system did not reveal any pathology (Figures 1, 2, and 3). Bilirubin was trended and continued to rise on the subsequent days, thus a CT-guided liver biopsy was performed. Slides were prepared and examined under the microscope using H&E stain and showed moderate to marked hepatocanalicular cholestasis with minimal centrilobular and hepatocellular injury (Figure 4, 5).
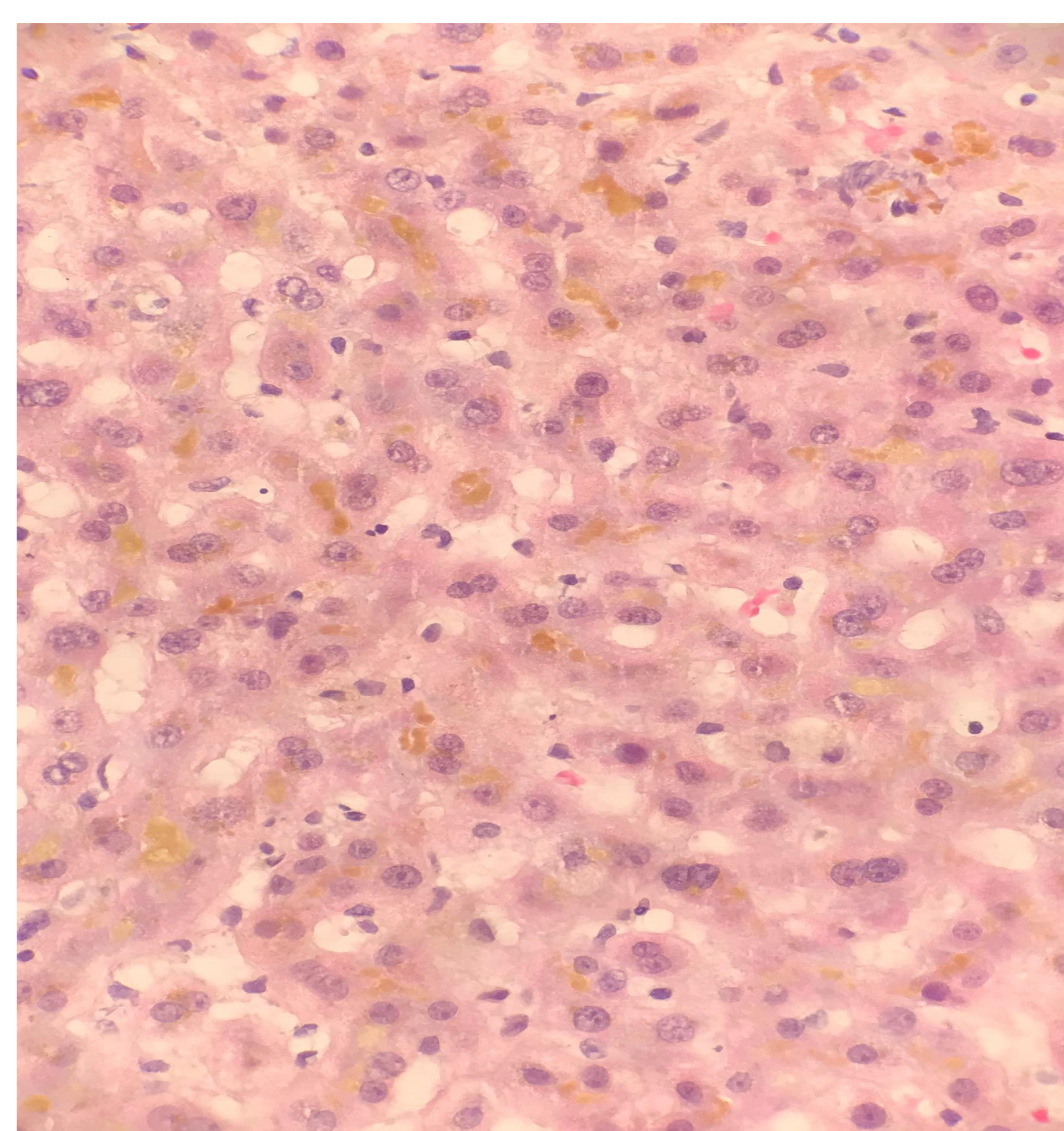
•Figure 4. CT-guided core biopsy of liver shows moderate to marked hepatocanalicular cholestasis with centrizonal distribution and associated bile plugs (hematoxylin-eosin, original magnification 400X).
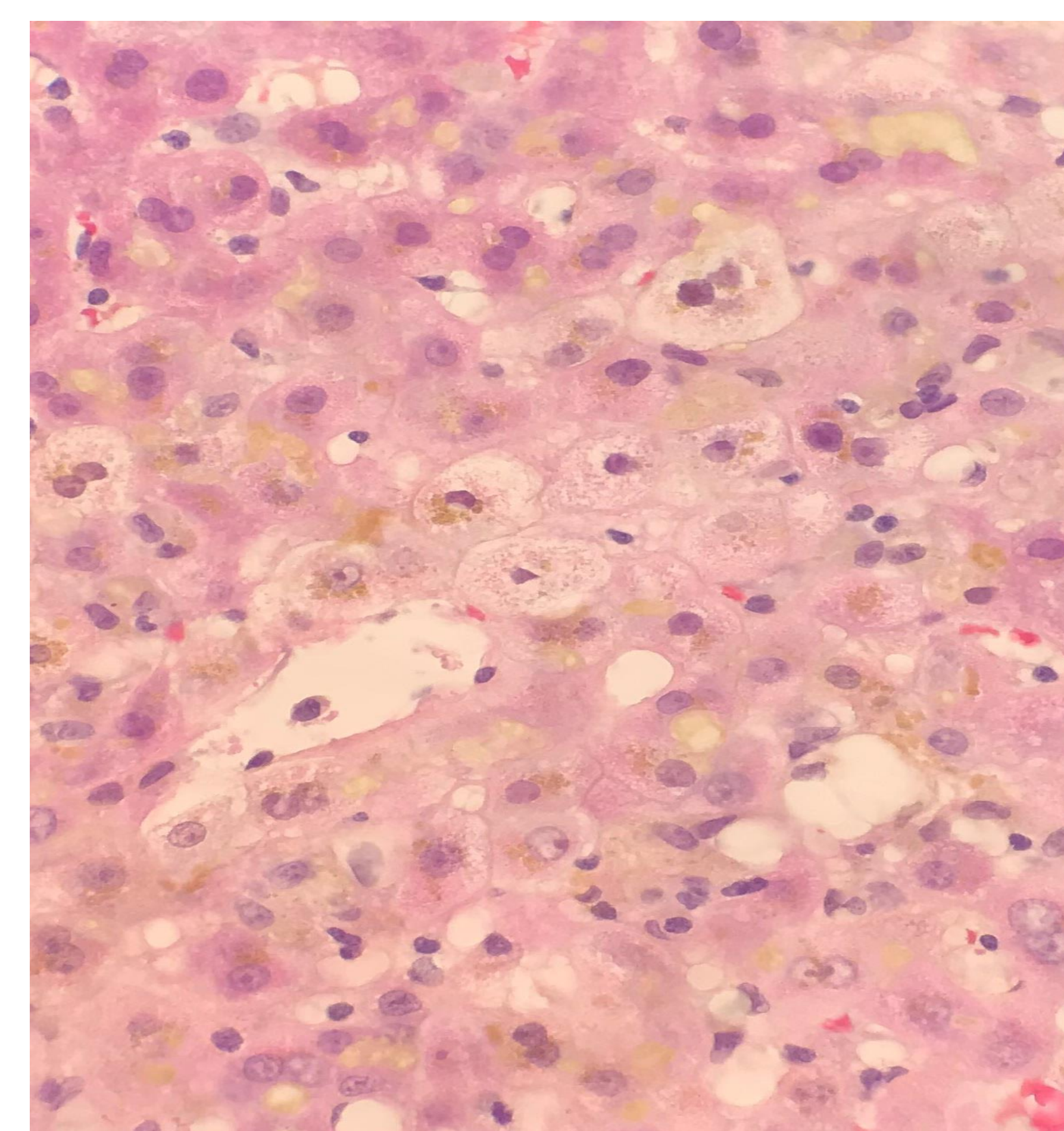
•Figure 5. CT-guided core biopsy of liver shows minimal hepatocellular injury with few perivenular hepatocytes with balloon degeneration and minimal to mild centrilobular inflammation (hematoxylin-eosin, original magnification 400X).

That pathology finding in the light of the clinical presentation was strongly suggestive of drug induced cholestasis. The patient was discharged with cholestyramine and Zofran for symptomatic management. Follow up as an outpatient was scheduled with our resident clinic and bilirubin at discharge was 22.1 mg/dl. After two-weeks, total bilirubin trended up to 39 mg/dl and the patient was started on ursodeoxycholic acid. At 4 weeks after discharge the total bilirubin started to decline to 13 mg/dl with resolution of his symptoms.

Discussion

- The use of anabolic steroids has been linked to multiple liver pathologies including bland cholestasis, peliosis hepatis, hepatic adenoma, hepatocellular carcinoma and nodular regenerative hyperplasia. Most pathologies happen with long term use of these medications (4). However cholestasis can happen after a short course of anabolic steroids as seen in our case.
- Oral anabolic steroids are more commonly associated with acute cholestasis due to the C-17 alkylation.
- Although cholestasis are usually reversable with stopping therapy, full recovery is often delayed. In addition, fatalities have been reported, usually due to marked cholestasis complicated by malnutrition, renal failure, and associated opportunistic infections (5).
- A study of men who regularly attended gyms in London in 2000 found that 15.2% of the 792 men surveyed had used anabolic steroids in the preceding year (6). This data highlights the prevalence of anabolic steroids and the importance of asking about recent and remote anabolic steroids use in younger males with abnormal liver functions to prevent progressive liver injury.

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