NYU Long Island School of Medicine

DEPARTMENT OF PATHOLOGY

Short Report in Pathology

Organ system: Gastrointestinal

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History:

Patient is a 60-year-old female with a history of breast cancer 15 years ago s/p surgical resection and reconstruction, diverticulosis, GERD, hyperlipidemia, and anxiety. She had a motor vehicle accident 2 years ago. Recently, she was found to have increased liver function tests (LFTs), including ALT 106, AST 94, and Alkaline phosphatase 96. Her serum smooth muscle antibody was positive at 1:40. Her anti-nuclear antibody and anti-mitochondrial antibody were negative. Her BMI was 29. Hepatologists worried about possible autoimmune hepatitis versus metabolic dysfunction-associated steatohepatitis (MASH). A medical liver biopsy was performed.

Gross Image:

None

Microscopic Images:

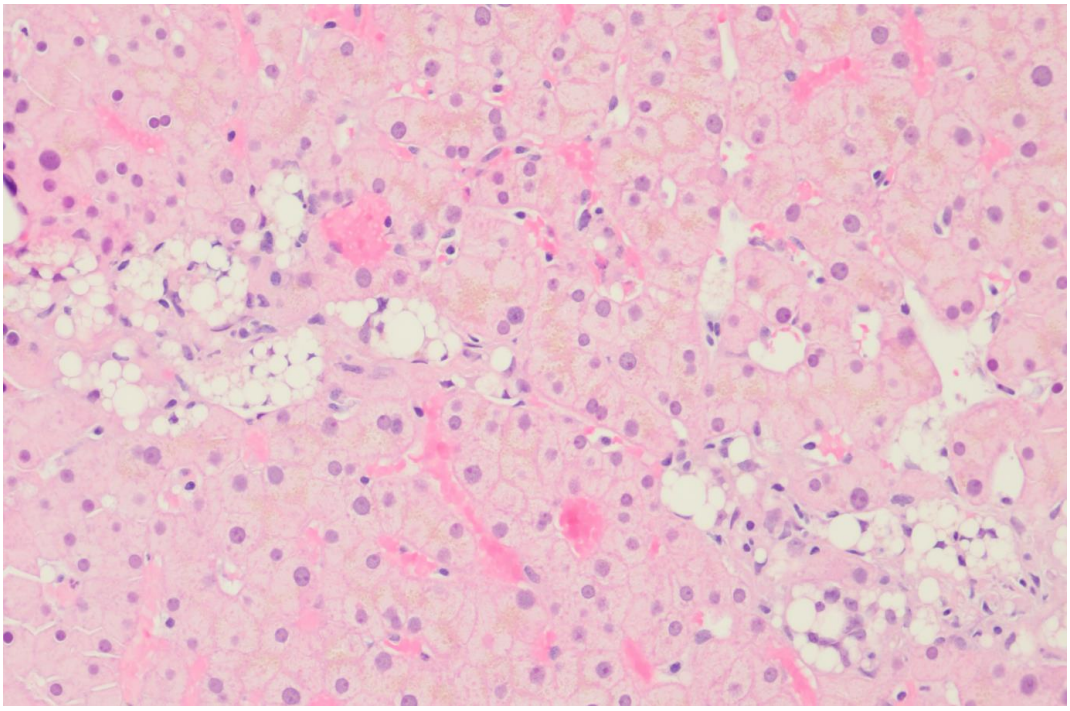

Figure 1: Archiecturally normal liver parenchyma with vacuolated cells, mostly in the sinusoids of the perivenular zone. (100x, H&E)

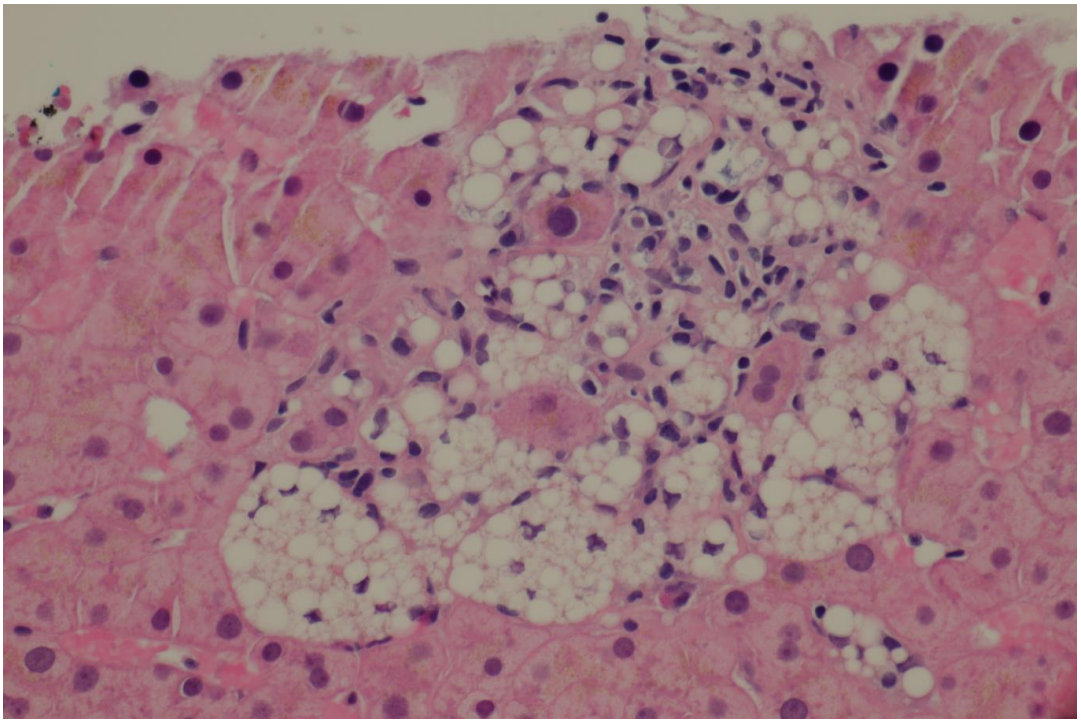

Figure 2: Vacuolated cells resembling macrovesicular steatosis or small to medium droplet steatosis. (200x, H&E)

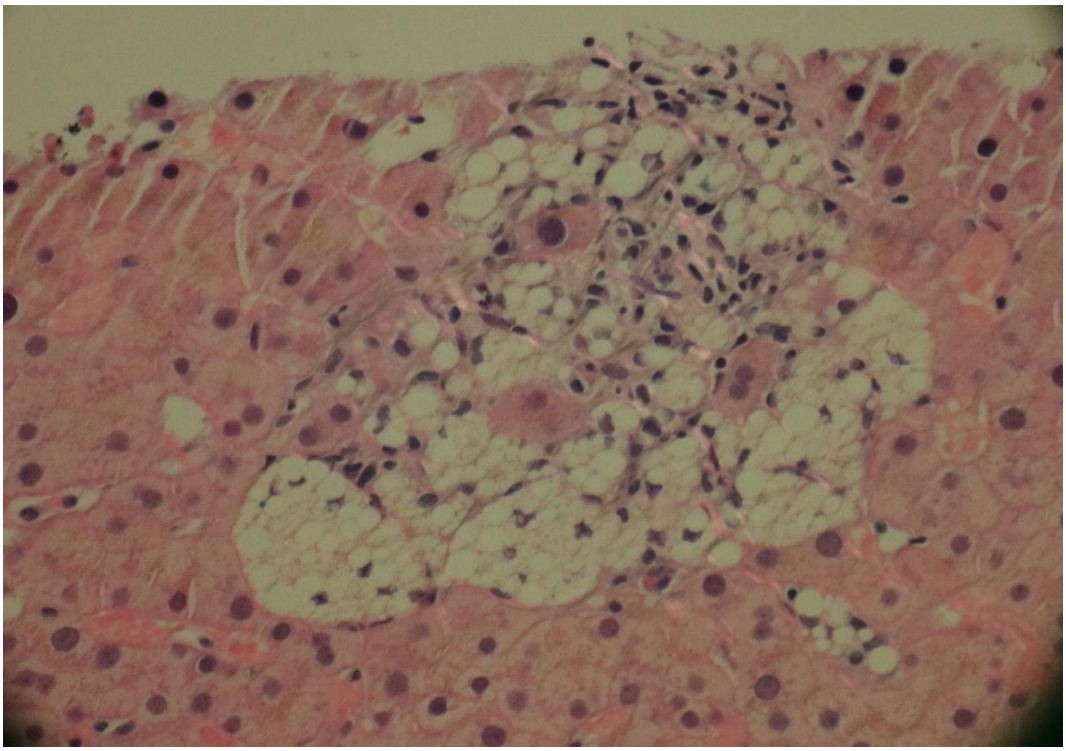

Figure 3: Polarized light demonstrating polarizable material in the vacuolated cells. (200x, H&E)

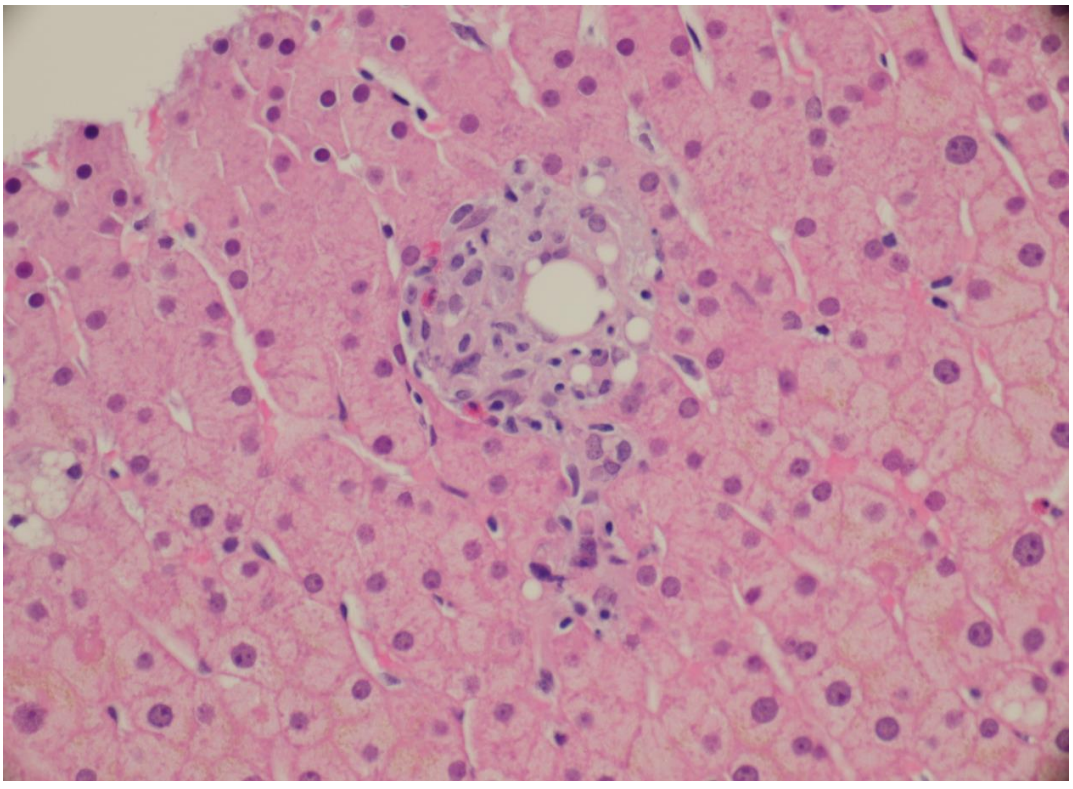

Figure 4: Multiple fibrin ring granulomas in the lobules. (200x, H&E)

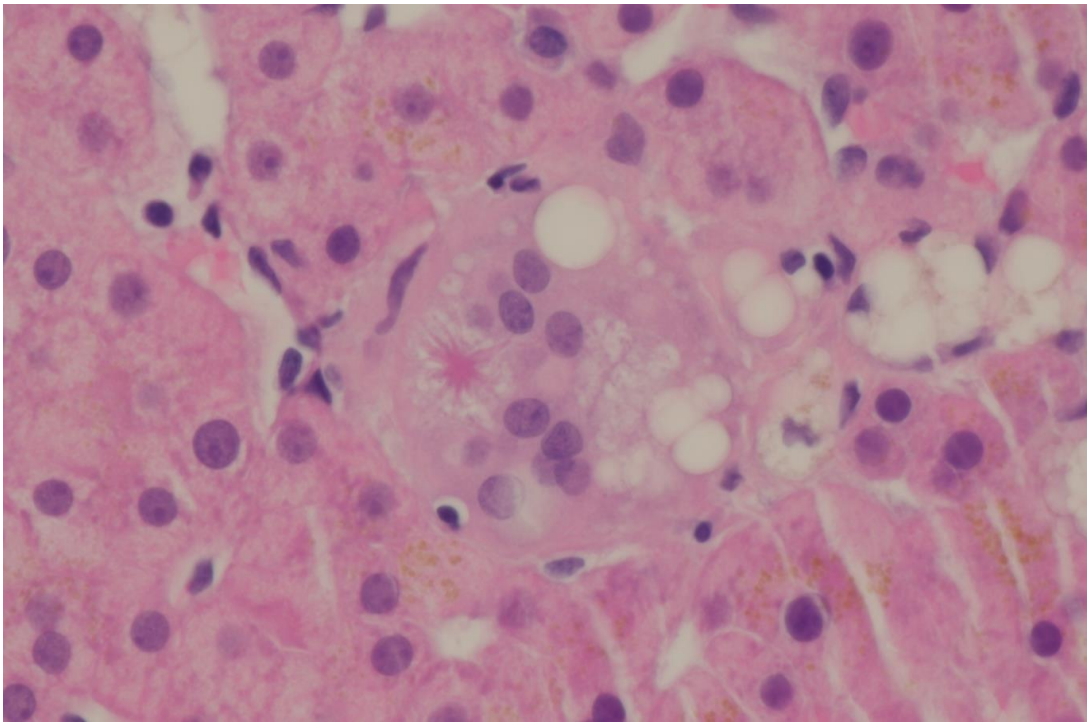

Figure 5: Granulomas and vacuolated histiocytes containing asteroid bodies (400x, H&E)

Diagnosis:

Silicone granuloma hepatitis

Differential diagnoses:

1. Metabolic dysfunction-associated steatohepatitis (MASH)
2. Alcohol related steatohepatitis (ASH)
3. Q fever (caused by *Coxiella burnetii* infection)
4. Liposarcoma metastasis to liver
5. Hypervitaminosis A

Discussion:

Silicone granuloma hepatitis is a rare complication of breast implant rupture or leakage. Silicone particles tend to deposit within and activate Kupffer cells, resulting in chronic hepatitis. Symptoms typically manifest as acute-on-chronic liver disease with chronically elevated liver enzymes. The destructive nature of silica particle deposition in the liver parenchyma is evidenced by the presence of both necrotic and non-necrotic granulomas, with increased Kupffer cell production leading to further cellular breakdown. Liver biopsy remains the gold standard for diagnosis.

Studies have shown that 11.8% of breast implants rupture, with a median life expectancy of 10-16 years. Rupture risk begins around 6 years post-insertion and increases significantly by 13 years. Silicone leakage can act as a foreign body, potentially eliciting

autoantibody production. The median time from implant insertion to abdominal symptomatology is approximately 18.2 years. Associated autoimmune conditions include sarcoidosis and Sjögren's syndrome with positive serum anti-Ro antibodies. These findings highlight the importance of long-term monitoring for patients with silicone breast implants, as hepatobiliary complications may develop years after implantation.

References:

1. Joshua Agilinko, Dharshanan Raj, Ken Vin Wong, Daniele Fanelli, Nicklaus Ng, Bertrand Agilinko, Mohammad Hasan Hepatobiliary complications from ruptured silicone breast implants – a comprehensive literature review. Ger Med Sci. 2021 May 25;19
2. Rachel Hudacko, Kapil Anand, Ronald Gordon, Tina John, Carolyn Catalano, Francisco Zaldana, Henry J Katz, Billie Fyfe, Vinod Rustgi . Hepatic Silicone Granulomas Secondary to Ruptured Breast Implants: A Report of Two Cases. Case Reports Hepatol. 2019 Nov 3;2019:7348168.