Pyogenic liver abscess with reactive thrombocytosis - A rare case report

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ABSTRACT
Pyogenic liver abscess is an uncommon entity which usually affects the elderly. Clinical signs and symptoms vary, leading to delay in diagnosis and, higher rate of complications. Reactive thrombocytosis is a phenomenon which usually occurs secondary to infections, inflammations, cancer and or bleeding. We present a case of a twenty four year old female with hepatic abscess associated with right side plural effusion and reactive thrombocytosis.
1. INTRODUCTION
A pyogenic liver abscess is characterized by collection of pus within the liver. Common causes are; peritonitis causing leakage of intra-abdominal bowel contents with subsequent spread to the liver via portal circulation or direct spreading of biliary infection. They can also result from arterial hematogenic seeding in systemic infection. Pyogenic liver abscesses contributes to 48 percent of visceral abscesses and 13 percent of intra-abdominal abscesses overall (Altemeier et al., 1973). Risk factors are diabetes mellitus, underlying hepatobiliary or pancreatic disease, liver transplant, and regular use of proton-pump inhibitors (Huangm et al., 1996; Mohsen et al., 2002; Chan et al., 2005; Thomsen et al., 2007; Lin et al., 2017) Thrombocytosis can be classified as primary and reactive or secondary. Primary or essential thrombocytosis is due to clonal proliferation of marrow megakaryocytes; and, secondary thrombocytosis is a reaction to infection or inflammation.

2. CASE REPORT
A 24 year-old woman presented with progressive right sided pleuritic chest pain since 10 days and, pain in abdomen since 5 days. She gave history of fevers, chills, and shortness of breath for the previous 2 weeks. She denied cough, hemoptysis, night sweats, weight loss, or chest trauma. She denied alcohol or drug use. She had no previous travel history. She was not on drugs. On physical examination, she appeared restless; Pulse was 118/min, temperature 102°F, respiratory rate 26 breaths per minute. Blood pressure - 110/60 mm of Hg, SpO2 92 % on room air, JVP was normal. ENT examination was normal. Respiratory system examination revealed stony dull note in right infra scapular and infra mammary areas with absent air entry. Her CVS examination was normal. The abdomen exam showed tenderness in right hypochondrium.

**Investigations:** Hb-9.8 gm%. TLC: white blood cell count (WBC) 24,200/mm3 (84% neutrophils). Absolute platelet count-4,43,000/microliters. Peripheral smear showed increased platelets in aggregates. (Fig-1) Kidney function test was normal. LFT: Total bilirubin was 3.2 mg%, direct 3.0 mg% and indirect 0.2 mg%. Alkaline phosphatase 290 IU, ALT 72 IU, SGOT 83 IU. Albumin was 2.5 g/dL. Human immunodeficiency virus-I (HIV-I) testing was negative.

![Figure 1](image1.png)

**Figure 1** Peripheral smear stained with Leishman stain (oil immersion 100X) showing normocytic normochromic RBCs and increased Platelets seen in aggregates features of thrombocytosis

Cultures of blood, sputum, and urine were negative. Platelet counts began to rise upto maximum 18,22,000/micro L range in the second week. USG abdomen revealed hepatomegaly with liver abscess, liver AP span in MCL 15.0 cm size and normal echotexture. Evidence of an ill-defined hypo-echoic lesion was noted in the right lobe of liver, postero-superiorly and postero-inferiorly segment VI and VII. Lesion was predominantly hypo-echoic. It measured 8.7 x 9.9x 8.7 cm, approximate volume 300 cc (Fig-2). USG guided pigtail catheterization was done and abscess was drained (Fig-3). The drained pus sent for culture and sensitivity developed no growth. She was treated with intravenous antibiotics and percutaneous drainage through pigtail catheterization.
3. DISCUSSION

Pyogenic liver abscess is defined by pus collections in the liver. The most frequent pathogen responsible is *E. coli* and *K. pneumoniae* (Johannsen et al., 2007). Most cases are caused by ascending biliary tract pathology infection (e.g. cholangitis due to choledocholithiasis, i.e. biliary strictures). Infectious focus in the gastrointestinal tract or bacteremia exposes the liver to heavy bacterial loads due to concurrent blood supply from the portal vein and the hepatic artery (Huang et al., 1996; Rahimian et al., 2004; Lam et al., 1999). Patients, usually middle-aged / elderly males, have non-specific symptoms including fever, malaise, and weight loss. Right upper quadrant discomfort and tender hepatomegaly are common symptoms of liver abscess, but are often absent. Diagnosis is confirmed on abdominal imaging (Huang et al., 1996; Mohsen et al., 2002; Rahimian et al., 2004; Rubin et al., 1974).

The laboratory finding of thrombocytosis, defined as an abnormally elevated platelet count, is not generally recognized as a clinical indicator of infection. Several observational studies have shown that infection is a common cause of thrombocytosis (Buss et al., 1994; Davis & Ross, 1973; Griesshammer et al., 1999; Santhosh-Kumar et al., 1991). The common infections that are associated with reactive thrombocytosis are skin/soft tissue, urinary tract infections, pneumonia, followed by GI infections (Prina et al., 2013; Gofrit et al., 2006; Schattner et al., 2019). Platelets being acute phase reactants can increase due to stimuli like systemic infections, inflammatory conditions, and tumor cells (Vora & Lilleyman, 1993; Chiarello et al., 2011; Tefferi & Barbui, 2017).

The bone marrow present Pluripotent haematopoietic stem cells which are serves as progenitor cell for all haematopoietic cellular elements. These elements undergo subsequent cell divisions. Thrombopoietine (TPO) is a hormone which can differentiate megakaryocytes to mature platelets by forming platelet growth factor c-mpl. Inflammatory cytokines like interleukin 6 (IL-6) stimulate reactive thrombocytosis. Any inflammatory process such as bacterial infection, neoplasia, sepsis, multiple trauma, burns or pancreatitis that raises serum IL levels (especially IL-6) can increase the number of circulating platelets. In infective thrombocytosis
serum IL-6 level is usually elevated and correlate with prognosis. Sometimes infective/ reactive thrombocytosis can indicate an occult abscess like in our case (Unsal et al., 2005; Gofrit et al., 2006). In infections, hepatic synthesis of an acute phase reactant, C-reactive protein may increase and stimulate IL-6 that in turn stimulates platelet production in the bone marrow. One study revealed that 81% of patients with thrombocytosis had elevated serum levels of either IL-6 or C-reactive protein (Tefferi et al., 1994; Acharya et al., 2020). Secondary thrombocytosis because of infectious disease usually do not cause thrombogenesis. Treatment of infection resolves the issue and is the cornerstone to management.

4. CONCLUSION
Reactive thrombocytosis can occur due to various triggers, and, infection is one of them. Common infections are skin/soft tissue, pulmonary, renal, GI infections. Reactive thrombocytosis usually resolves with treatment of the infection. No specific treatment is required for thrombocytosis because per se, it doesn’t cause arterial or venous thrombosis.

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Conflicts of Interest: The authors declare no conflict of interest.

Consent
Appropriate signed consent was taken from the patient before writing this case report.

REFERENCE


