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COVID-19, Necrotizing Pancreatitis, and Abdominal Compartment Syndrome: A Perfect Cytokine Storm?

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Introduction:

Coronavirus disease 2019 (COVID-19) induces a dysregulated immune response, leading to a drastic elevation of proinflammatory cytokines. This cytokine storm has the potential to aggravate any prior ongoing inflammation. Moreover, acute pancreatitis can cause local necrosis, thereby causing extensive abdominal inflammation. This condition increases the risk of abdominal compartment syndrome (ACS) and its deleterious consequences.

Case presentation:

We report the case of a 37-year-old male with a past medical history of chronic pancreatitis and alcohol use disorder who presented to the emergency department complaining of abdominal pain. Physical examination revealed a tender abdomen. Initial workup showed elevated amylase and lipase, a positive COVID-19 polymerase chain reaction (PCR) test, and elevated inflammatory markers. The patient denied any respiratory symptoms. Initial abdominal CT scan revealed mild pancreatic inflammation. The patient was admitted to the respiratory ICU and managed with fluid resuscitation and pain control. However, the patient had increasing oxygen requirements, leukocytosis, and worsening kidney function. A trans-bladder measurement of intra-abdominal pressure revealed severe ACS. Broad-spectrum antibiotics were started; however, after 72 hours of treatment, the patient had a cardiopulmonary arrest. He returned to spontaneous circulation after advanced cardiovascular life support (ACLS) protocol and intubation. A repeat CT scan of the abdomen showed necrotizing pancreatitis with a large-volume hemoperitoneum (Figure 1). Urgent pancreatic necrosectomy was performed with drainage of the hemoperitoneum. The patient was transferred to a long-term acute care facility for extended antibiotic therapy where he eventually recovered.

Conclusion:

This case illustrates the catastrophic consequences of necrotizing pancreatitis complicated by sepsis and ACS in a COVID-19-positive patient.

