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COVID-19 Presenting A Severe Acute Necrotizing Pancreatitis in Young Man Patient: A Case Report

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COVID-19; Pancreatitis; Multi-detector computed tomography

1. Abstract

The novel coronavirus disease 2019 (COVID-19) is a highly infectious and rapidly spreading disease. There are limited published data on the epidemiology and outcomes of COVID-19 disease and pancreatitis. We think this is the first report describing MDCT findings of COVID-19 disease with severe acute necrotizing pancreatitis in young men.

A 27-year-old male presented with epigastric heaviness and nausea. He underwent medical treatment. After 5 days; the patient developed severe epigastric pain radiating to the back.

Multi-detector computed tomography (MDCT) showed normal chest findings. The abdominal findings were signs denoted interstitial pancreatitis. After two 2 days; there is deterioration of patient's condition and he underwent another CT scan. CT findings were newly developed bilateral pleural effusion with bilateral lower pneumonic consolidation. The abdominal findings were acute necrotizing pancreatitis in the form of extensive necrosis pancreatic body and tail with associated evidence of peripancreatic fluid collection. With history of contact to COVID-19 patient; the possibility of COVID-19 disease was considered. Nasal swab was positive for COVID-19 with real-time polymerase chain reaction (RT-PCR), and the diagnosis of COVID-19 disease was confirmed. Follow up CT scan after 4 days revealed deterioration of chest CT findings with stable pancreatic condition. Follow up CT scan after 3 months revealed normal chest findings with complete encapsulation of pancreatic pseudocyst. There is severe pattern of acute necrotizing pancreatitis associated with COVID-19 disease in young men patient. Clinician and radiologists should be aware with the possibility of this finding to help with timely and accurate management.

2. Introduction

The novel coronavirus disease 2019 (COVID-19) is a highly infectious and rapidly spreading disease. The most commonly affected organ system by COVID-19 is the pulmonary system with clinical manifestations similar to SARS and MERS [1]. While the lung is most commonly affected, extrapulmonary organs and organ systems (including the cardiac, gastrointestinal, hepatic, pancreatic, renal, ocular, and dermatologic) are also affected by COVID-19, which could have significant health consequences [2]. There are limited published data on the epidemiology and outcomes of COVID-19 disease and pancreatitis. We think this is the first report describing MDCT findings of COVID-19 disease and severe acute necrotizing pancreatitis in young man.

3. Case Report

A 27-year-old male presented with epigastric heaviness and nausea. He underwent medical treatment. After 5 days; the patient developed severe epigastric pain radiating to the back.

Patient underwent multi-detector computed tomography (MDCT) chest examination using 64 MDCT scanner (Brilliance 64; Philips Healthcare, Best, The Netherlands). Initial multi-detector computed tomography (MDCT) showed normal chest findings. The abdominal findings were enlarged pancreas with edema at uncinate process and pancreatic head and oedema in peripancreatic fat. These findings denoted interstitial pancreatitis (Figure1 A-B).

Other causes of acute pancreatitis were excluded including alcohol, biliary obstruction due to gall stones, trauma, hypertriglyceridemia, drugs, hypercalcemia, and hypotension. Laboratory tests showed a low percentage of lymphocytes (4.229%), a low lymphocyte count, (0.867 k/uL), a normal white blood cell count (20.51 k/uL), red blood cell count (6.206 m/uL), hemoglobin concentration (17.07g/dl), platelet count (248.0 k/uL), serum creatinine (0.8 mg/dL), serum albumin (3.1 gm/dL), serum total bilirubin (6.7 mg/dL), serum direct bilirubin (4.3 mg/dL) and alanine transaminase (ALT) (279 iu/L), Follow up after 2 days; laboratory tests showed a low percentage of lymphocytes (6%), a low lymphocyte count, (0.8 k/uL), a normal white blood cell count (12.8 k/uL), red blood cell count (5.52 m/uL), hemoglobin concentration (14.7g/dl), platelet count (142 k/uL), serum creatinine (0.7 mg/dL), serum albumin (3.1 gm/dL), serum total bilirubin (2.8 mg/dL), serum direct bilirubin (1.3 mg/dL), alanine transaminase (ALT) (87 iu/L) and serum amylase (1290 iu/L).

After two 2 days; there is deterioration of patient's condition and he underwent another CT scan. CT findings were newly developed bilateral pleural effusion with bilateral lower pneumonic consolidation. The abdominal findings were severe acute necrotizing pancreatitis in the form of extensive necrosis pancreatic body and tail with associated evidence of peripancreatic fluid collection (Figure 1 C-D). No dilated intra or extra-hepatic bile ducts. No detected common bile duct stones. According to CT severity of acute pancreatitis; it was 9/10. With history of contact to COVID-19 patient; the possibility of COVID-19 disease was considered. Nasal swab was positive for COVID-19 with real-time polymerase chain reaction (RT-PCR), and the diagnosis of COVID-19 disease. Follow up CT scan after 4 days revealed deterioration of chest CT findings with stable pancreatic condition (Figure 1 E-F).

Laboratory tests after 4 days showed a low percentage of lymphocytes (6%), a low lymphocyte count, (0.6 k/uL), a normal white blood cell count (15.5 k/uL), red blood cell count (4.39 m/uL), hemoglobin concentration (12 g/dl), platelet count (205 k/uL), serum creatinine (0.5 mg/dL), serum albumin (2.5 gm/dL), serum total bilirubin (1.6 mg/dL), serum direct bilirubin (0.8 mg/dL) and aspartate transaminase (AST) (22 iu/L) and serum amylase (445 iu/L).

Follow up CT scan after 3 months revealed normal chest findings with complete encapsulation of pancreatic pseudocyst (Figure 1 G-H).

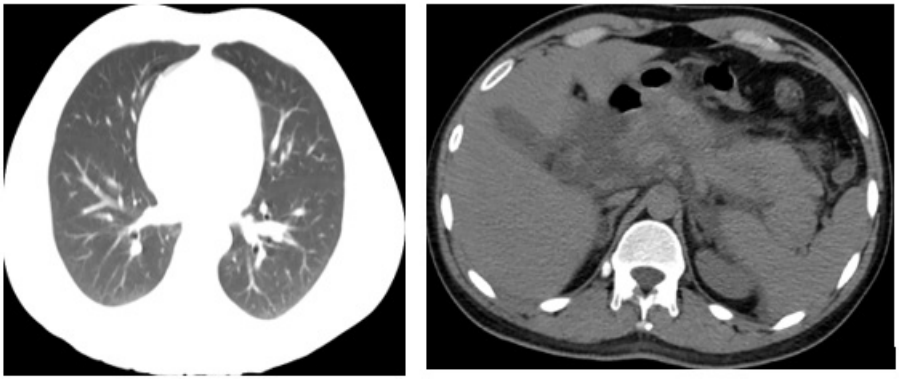

Figure 1(A-B): A 27-year-old man with confirmed coronavirus disease (COVID-19). Initial multidetector CT scan of the chest and abdomen shows normal chest findings with signs of interstitial pancreatitis

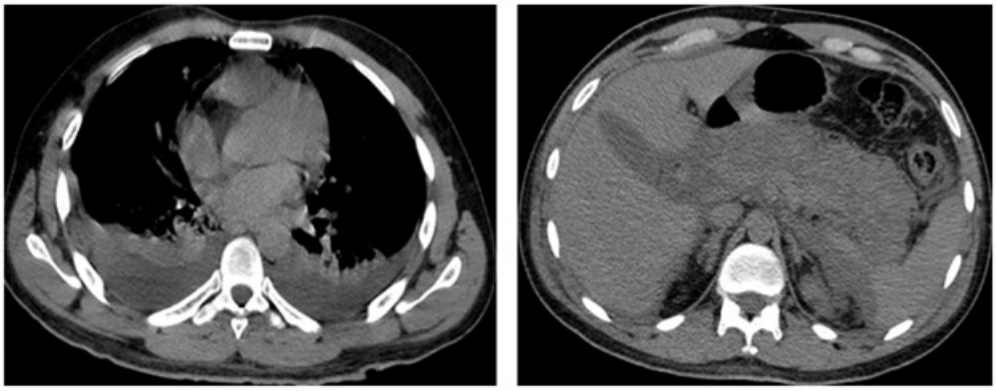

Figure 1(C-D): Follow up MDCT scan after 2 days shows developed bilateral pleural effusion with bilateral lower pneumonic consolidation with signs of acute severe necrotizing pancreatitis.

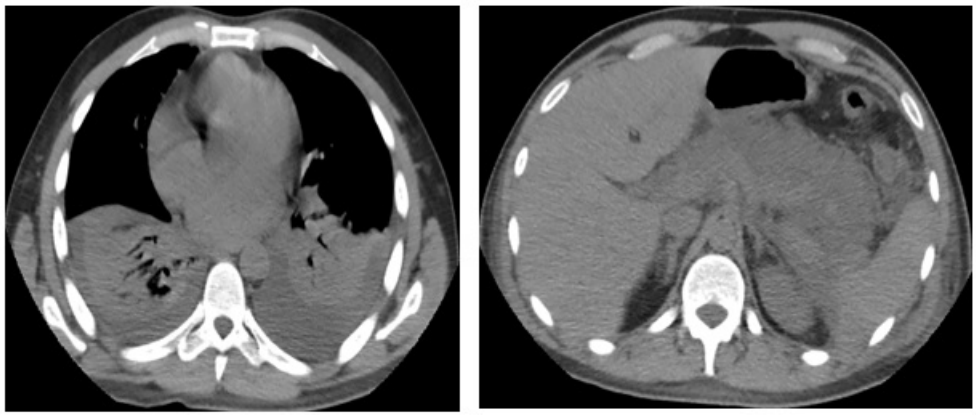

Figure 1(E-F): Follow up MDCT scan after 4 days revealed deterioration of chest CT findings with stable pancreatic condition.

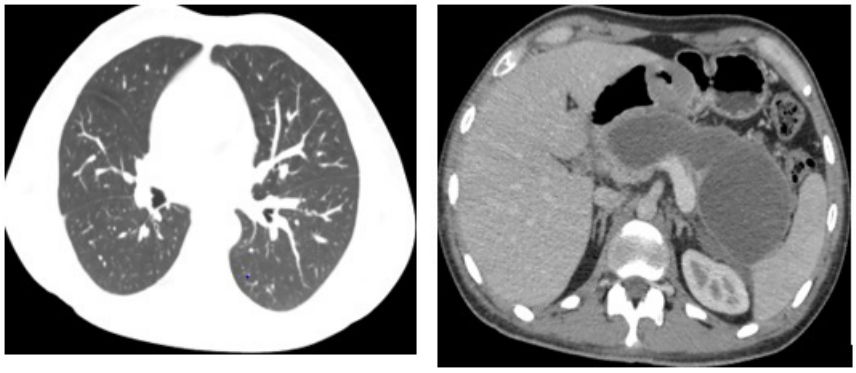

Figure 1(G-H): Follow up CT scan after 3 months revealed normal chest findings with complete encapsulation of pancreatic pseudocyst.

4. Discussion

COVID-19 pneumonia is a new, highly contagious viral pneumonia caused by a novel coronavirus (COVID-19). The typical CT findings of COVID-19 pneumonia included lung bilateral ground glass opacities [3]. Patient cohorts with approximately 40 per cent of COVID-19 patients presenting with gastrointestinal symptoms, including abdominal pain, exist. Additionally, up to 16% of patients with severe SARS-CoV-2 infection have raised serum amylase /lipase, with 7% displaying accompanying significant pancreatic changes on CT. Crucially, the rate of increase of COVID-19 is phenomenal, meaning atypical COVID-19 presentations and surgical pathology with concomitant COVID-19 are more likely, such as acute pancreatitis, which may have poorer outcomes secondary to a double pulmonary insult. Considering this, they hypothesize that COVID-19- associated pancreatic dysfunction may exist [4].

We report one case with acute severe necrotizing pancreatitis associated with COVID-19 infection and pneumonia. According to the current guidelines [5]; the diagnosis of acute pancreatitis depends on at least two of the three following signs: 1) abdominal pain, 2) serum amylase or lipase >3 times the upper normal limit, and 3) characteristic radiological findings. Our case shows all these three signs.

While SARS-CoV-2 has been established as a respiratory tract organism, its pathogenesis may also be responsible for the gastrointestinal manifestations that accompany coronavirus disease (COVID-19). Pancreatic injury has been detected in some patients, ranging on a spectrum with the severity of disease. As the viral receptor ACE2 is present in the gastrointestinal tract, it may play a role in the virus's ability to dys-regulate the pancreatic function [6]. Although clear pathogenesis is unknown, acute pancreatitis in COVID19 disease could occur due to the direct cytopathic effect of local SARS-CoV-2 replication or indirectly by harmful immune response induced by the virus [7].

Acute pancreatitis as a complication can be associated with COVID-19 and underlines the importance of measuring pancreatic amylase in patients with COVID-19 and abdominal pain [8]. Our study coincides with this finding. While there was no direct cause of viral pancreatitis in our case, the temporal relationship between pancreatitis and COVID-19, affection of pancreatic tail and body first, no dilated pancreatic or common bile duct, no ductal gall stone, and lack of other etiologies would suggest coronavirus-induced pancreatitis.

In conclusion, there is severe acute necrotizing pancreatitis associated with COVID-19 disease in young man patient. Clinician and radiologists should be aware with the possibility of these findings to help with timely and accurate management. While oral transmission has not been definitively established, there is evidence to support its possibility, warranting the need for additional precautions.

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