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"Pancreas"-An enigmatic organ as always: An eventful Pancreatic Necrotic Sequelae in Covid-19 Era

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Abstract

Acute pancreatitis is an emerging problem with an incidence,[2] between 3.6 and 13.2 cases/100,000 children. However, necrotizing pancreatitis presents similar to Uncomplicated pancreatitis but with high morbidity and mortality. Computed Tomography allows an assessment of the severity of the disease and the risk of complications(CTSI). Un complicated pancreatitis cases have a favorable outcome, but necrotizing pancreatitis cases require intensive medical treatment and surgical treatment. We report a case of an 11-year-old girl post covid with clinical presentation compatible with acute necrotizing pancreatitis, confirmed by abdominal ultrasonography and CT scan. Close monitoring and an aggressive approach were adopted, with clinical and analytical improvement. We are exploring one such rarity and possibility of acute necrotizing pancreatitis in a covid-19 virus-infected child,[10] or as a spectrum of MSI-C,[9](Multisystem inflammatory syndrome in children).

Keywords: NIL

Introduction

Case Presentation

An 11-year-old girl was admitted to our hospital with abdominal pain and bilious vomiting for 1 month, associated with fever. Abdominal pain was dull aching type, radiating to back, aggravated on food intake, and relieved on analgesics. It was associated with Low-grade Fever without any associated chills or rigors. She was a known case of Hypothyroidism on medication.

General Examination was unremarkable. However, on Abdominal Examination tenderness in the epigastric, umbilical, and Right hypochondriac region was elicited with a palpable Mass of size 5x5 cm in the epigastric region that has ill-defined borders and variable consistency.

Investigations

Among baseline investigations, there was elevated TC-17000, Sr.Amylase-222, Sr.Lipase-124 levels. The patient was reactive to SARS COVID antibodies and positive for ANTI-TPO and Thyroglobulin antibodies.

CECT-Whole Abdomen with Screening USG-revealed pancreatitis with walled-off necrosis(WON) in the head and body of pancreas (Figure-1)with extension to transverse mesocolon, left anterior pararenal space, and gastrocolic ligament region, no bowel obstruction or ischemia(Figure-2).

Differential Diagnosis

Here in this case we would like to think covid-19 (viral) induced acute necrotizing pancreatitis or as a part of MSI-C(a multisystem inflammatory syndrome in children).

Treatment

Given the above findings, she underwent Laparoscopic Pancreatic Necrosectomy(Figure-3). Intraoperatively Necrosed Part of the head, body of the pancreas was found and debrided[Video-1]. Postoperatively she developed occasional fever spikes managed with antipyretics and IV antibiotics and was Discharged on POD 7.

Outcome And Follow-Up

On POD-15, she presented to ER with a complaint of pus discharge from a port site associated with high-grade fever, intermittent type but not associated with chills and rigors. CECT-Abdomen[Figure-4] did revealed-Significant decrease in the size of the pancreatic parenchymal necrotic collection in the head, neck, and proximal body region but there was a Significant Increase in the size and extent of the peripancreatic WON collection along the transverse mesocolon inferiorly and the gastrocolic ligament laterally.

She was taken up for Laparoscopic abscess drainage. Intraoperatively, Peripancreatic necrotic and purulent collection was identified and drained out. Postoperatively drain fluid culture grew Klebsiella pneumoniae susceptible to Colistin and Tigecycline. So she was treated with IV Antibiotics(COLISTIN, TIGECYCLINE) for 3 weeks along with antifungals(FLUCONAZOLE). Postoperatively she had no history of steatorrhea or hypoglycaemic episodes indicating there is an adequate amount of pancreas.

On 6 moths follow-up, the patient was symptomatically better with no recurrence.

Discussion

Studies done by Park et al,[3] and Kandula et al,[7] described the Etiology of acute necrotizing pancreatitis in children as often drugs, infections, trauma, and anatomic anomalies such as choledochal cysts and abnormal union of the pancreaticobiliary junction.

A study done by Morinville et al,[2] discussed various clinical definitions of acute pancreatitis, inferred Abdominal pain associated with AP may be vague in children and may not radiate to the back,[2]. Lipase elevations,[2] may be a more sensitive finding in younger children. Imaging features compatible with AP include pancreatic edema, pancreatic or peripancreatic necrosis, peripancreatic inflammation, acute fluid collections, pancreatic hemorrhage, pancreatic abscess, and pancreatic pseudocyst (signifying a recent AP episode). USG is the imaging modality of choice in most pediatric cases.

A study done by Alloway et al,[8] reported a case of covid-19 associated pancreatitis in a 7-year-old child in the absence of other etiological factors. Pathogenesis,[8] is initially caused by the unregulated activation of trypsin within the pancreatic acinar cells. COVID-19 typically appears with pulmonary symptoms but one of its extra-pulmonary presentations could be abdominal pain, as a part of "MSI-C",[9] (a multisystem inflammatory syndrome in children). Although the clear pathogenesis is unknown, the Abdominal pain in COVID19,[10] could occur due to the direct cytopathic effect of local SARS-CoV-2 replication which enters the GI epithelium via ACE-2 receptors, the same receptor it enters in the lungs, which may provide a possible pathophysiologic explanation for GI symptoms experienced in patients. The endothelial location of the ACE-2 receptors is also the hypothesized mechanism for increased thrombophilia in COVID-19 and potentially an etiology of acute pancreatitis.

Therapy was surgical debridement (necrosectomy) for patients with infected necrosis. Drainage or Debridement early in the course of the disease either by endoscopic,[1] or laparoscopic approaches is necessary. A study done by Van Santvoort et al,[4] compared the minimally invasive necrosectomy done via retroperitoneal approach versus laparotomy approach concluding the benefit of minimally invasive approach over laparotomy.

Learning Points

1. Most cases of acute pancreatitis are self-limited. However, necrotizing pancreatitis and more so infected necrosis, when they develop, can be associated with increased morbidity and mortality, making management a challenge.
2. The possibility of covid-19 infection, as one of the etiological factors for pancreatitis should be considered in a child with abdominal pain in the absence of other factors in the present decade.
3. It is now clearly recommended that a multidisciplinary group, when approaching a patient with severe acute pancreatitis

Volume 5, Issue 1; January-February 2022; Page No 233-235

complicated by necrosis and/or infection, should direct treatment towards the "3Ds", (Delay-Drain-Debride). The combination of the step-up approach, and minimally invasive surgery algorithm is feasible and could be considered as the standard of treatment for severe acute pancreatitis in children.

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FIGURE/VIDEO CAPTIONS

FIGURE-1: CECT-WHOLE ABDOMEN WITH SCREENING USG- revealed pancreatitis with walled off necrosis(WON) in the head and body of pancreas.

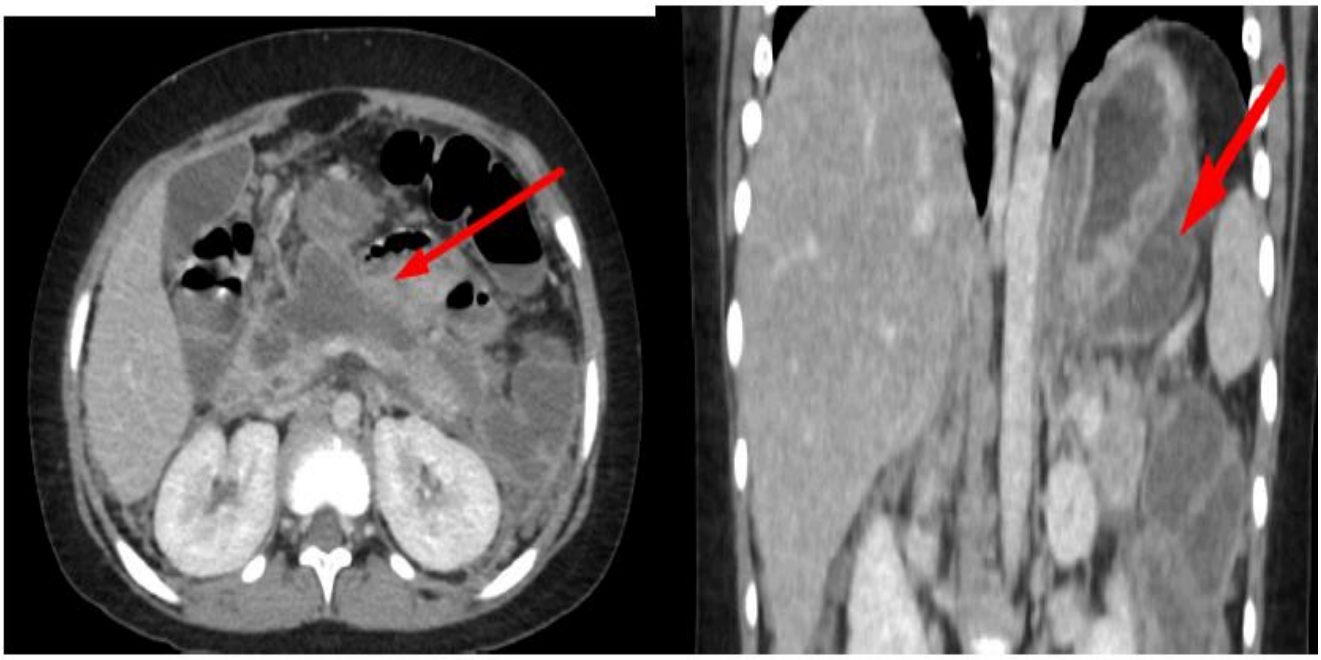
FIGURE-2: CECT-WHOLE ABDOMEN WITH SCREENING USG-revealed WON collection extension to transverse mesocolon, left anterior pararenal space and gastrocolic ligament region.

FIGURE-3:Intraoperative picture of debridement of necrosed head and neck of pancreas.

FIGURE-4: CECT-WHOLE ABDOMEN done on POD-15 -Significant decrease in necrotic collection in the head ,neck and proximal body region but Significant increase in peripancreatic WON collection along the transverse mesocolon inferiorly and the gastrocolic ligament laterally.

VIDEO-1:Intraoperative video of debridement of necrosed head and neck of pancreas.

Volume 5, Issue 1; January-February 2022; Page No 233-235



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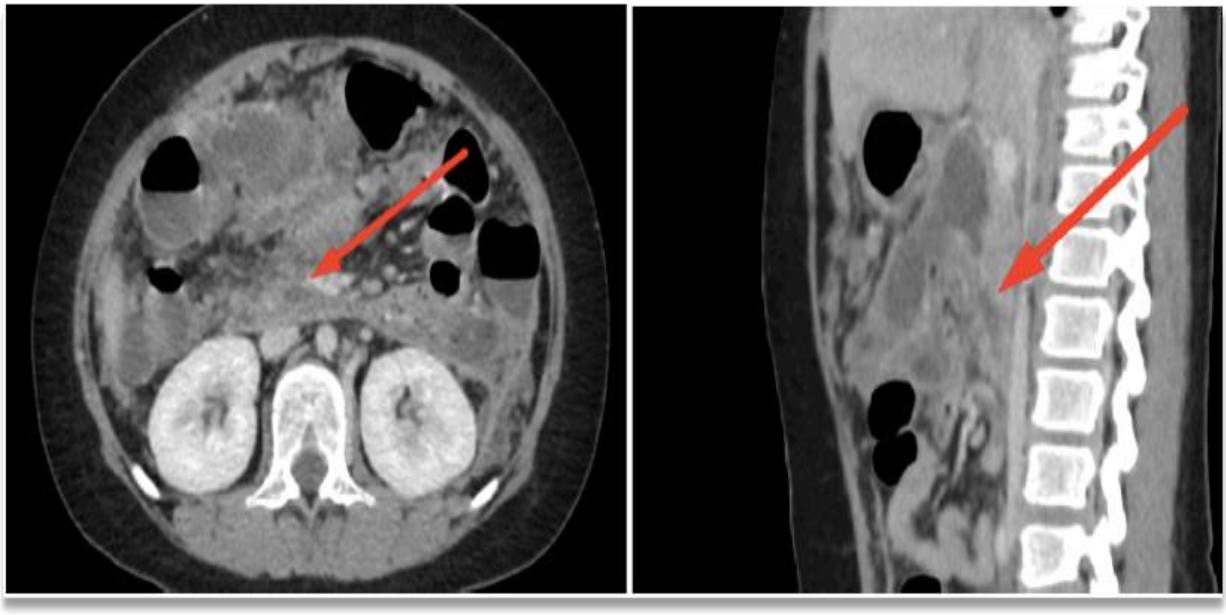

FIGURE-2: CECT-WHOLE ABDOMEN WITH SCREENING USG-revealed WON collection extension to transverse mesocolon, left anterior pararenal space and gastrocolic ligament region.

Volume 5, Issue 1; January-February 2022; Page No 233-235

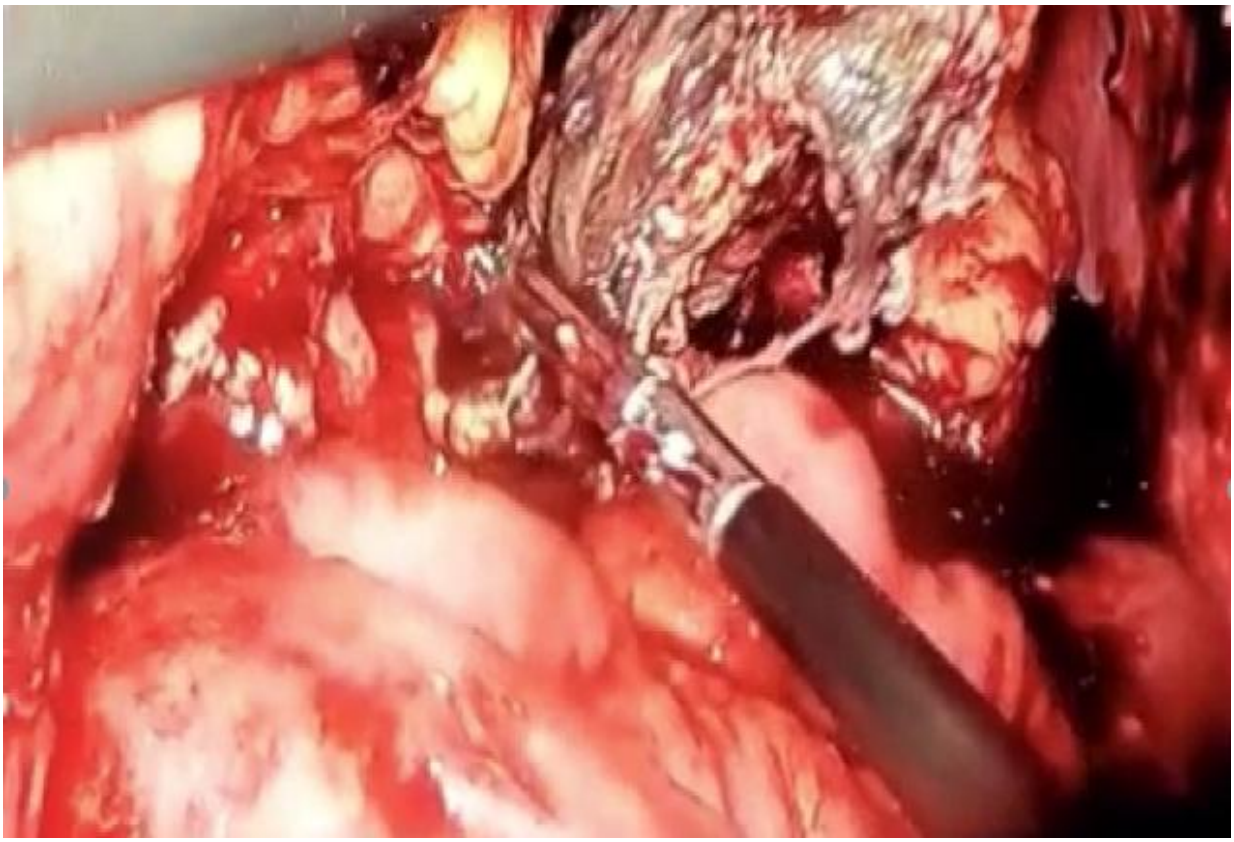

FIGURE-3:Intraoperative picture of debridement of necrosed head and neck of pancreas.

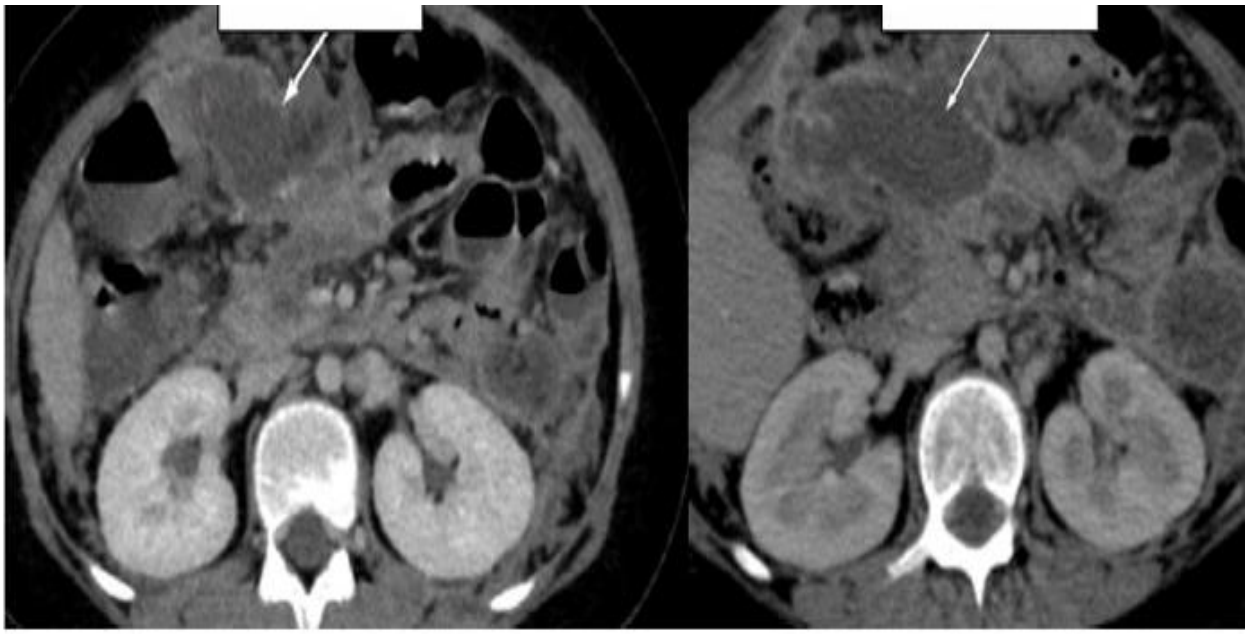

FIGURE-4: CECT-WHOLE ABDOMEN done on POD-15 -Significant decrease in necrotic collection in the head ,neck and proximal body region but Significant increase in peripancreatic WON collection along the transverse mesocolon inferiorly and the gastrocolic ligament laterally.

Volume 5, Issue 1; January-February 2022; Page No 233-235