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Acute Pancreatitis during SARS CoV 2 Infection

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Abstract

Introduction: Covid-19 is a systemic disease that can spread to all systems. Among the gastrointestinal manifestations, pancreatic involvement can have a major prognostic impact. We report 3 acute pancreatitis cases occurring during Covid-19, in Dakar. **Case 1:** 65-year-old woman who presented with intense atypical epigastric pain. Physical examination revealed obesity, high blood pressure and abdominal tenderness. Biological tests found increase CRP (134 mg/l) and lipasemia (312 UI/l). Abdominal CT scan showed findings of Balthazar grade C acute pancreatitis. RT-PCR for SARS CoV 2 RT-PCR was positive. The outcome was favorable. **Case 2:** 56-year-old woman patient with history of nephroangiosclerosis who presented with dyspnea, cough, fever and moderate epigastric pain. Physical examination revealed epigastric tenderness, high blood pressure, anuria. Biological testing, noted increase CRP (96 mg/l), lipasemia (793 UI/l), creatinine (227 mg/l) and urea (3.84 g/l). Abdominal CT scan showed acute edematous pancreatitis findings. SARS CoV 2 RT PCR was positive. The outcome was favorable. **Case 3:** 27-year-old man who presented with physical asthenia, headache, and epigastric pain. Physical examination found epigastric tenderness. Elevated CRP level was of 102 mg/l and lipasemia level was of 427 UI/l (7N). Abdominal CT scan showed acute edematous pancreatitis findings. SARS CoV 2 RT PCR was positive. The outcome was favorable. **Conclusion:** Acute pancreatitis can occur during Covid-19 infection. However, the imputability to the Covid-19 disease necessitates to rule out the most common causes.

Keywords

Acute Pancreatitis, SARS CoV 2, Covid-19

1. Introduction

Coronavirus Disease 2019 (Covid-19) caused by the severe acute respiratory syndrome coronavirus 2 (SARS CoV 2) is a global public health issue. Indeed, since its outbreak in December 2019 [1], SARS CoV 2 has been responsible for a global pandemic and several waves. It is a systemic disease with multiple facets, which can spread to all systems. Gastrointestinal manifestations of Covid-19 are frequent and widely reported in published literature. Among the gastrointestinal manifestations, acute pancreatitis constitutes a rarely described involvement that can have a major prognostic impact.

We report 3 cases of acute pancreatitis cases which occurred during SARS CoV 2 infection in the epidemic treatment center of the hospital Aristide le Dantec in Dakar.

2. Observations

Case 1

65-year-old woman, with no significant medical history, no alcohol consumption, hospitalized in March 2020 for shortness of breath, fever with shivering, severe asthenia and inflammatory polyartropathy relieved by paracetamol intake. Days later, atypic intense epigastric pain manifested associated to interrupted bowel movement without gas passing impairment nor vomiting. Physical examination found epigastric tenderness without guarding nor rigidity, class 2 obesity and class 2 systolic-diastolic high blood pressure. Capillary blood glucose was normal.

Biological tests found high C reactive protein (CRP) level of 134 mg/l and hypochromic microcytic anemia of 9.8 g/dl. Renal and liver function panels were normal as for lipidic panel, blood sugar and calcium level. SARS CoV 2 RT PCR was positive with high viral load. High lipasemia level of 312 UI/l (5.2 N) was found. Abdominal CT scan showed diffuse loss of pancreas lobulation, normal contrast-enhanced gland after intravenous contrast injection and infiltrated mesenteric fat prevailing around the pancreas (**Figure 1**).

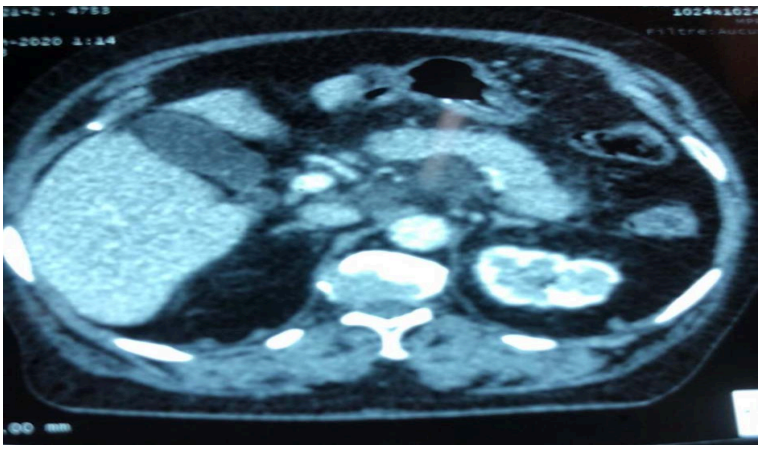

Figure 1. Abdominal CT scan acute pancreatitis findings reported in Case 1.

Improvement under treatment was noted with reduced pain at day 7 of hospitalization associated too significant decrease of CRP level. RT PCR was negative at day 13.

Case 2

56-year-old woman, no alcohol consumption, with medical history of thyroidectomy in 2016 (under Levothyroxine 0.25 mg per day) presenting high blood pressure for 05 years (under Amlodipine 5 mg per day), with nephrology follow up for nephroangiosclerosis, was hospitalized in June 2020 for shortness of breath lasting for a week associated to a productive cough with white phlegm, fever and inflammatory polyartropathy. She presented, secondarily with moderate, epigastric pain, radiating to the back, with no relieving factors, permanent with no tendency to spontaneous remission, no bowel movement disorder, no vomiting.

Physical examination found polypnea, oliguria with a urine output of 400 cc, systolic and diastolic high blood pressure of 160/90 mmHg and epigastric and periumbilical tenderness with no guarding nor rigidity.

Biology tests noted a non-specific inflammatory response syndrome with elevated CRP level of 96 mg/l, an increased erythrocyte sedimentation rate (ESR) of 100 MM/s, elevated lipasemia level of 793 UI/l (19 N), high creatinine level of 227 mg/l and urea of 3.84 g/l. Electrolyte blood test was normal as well as renal, liver function and lipidic panels. Electrocardiogram showed left ventricular hypertrophy. Abdominal CT scan revealed a diffuse loss of pancreas lobulation associated to pancreatic hypertrophy without necrosis, nor collection surrounding the pancreas. Thoracic CT scan revealed bilateral pleural lesions of ground glass opacities in favor of Covid-19 pneumonia. SARS CoV 2 RT PCR was positive.

Evolution under treatment was with reduced pain and respiratory symptoms and negative SARS CoV 2 RT PCR.

Case 3

27-year-old man, nonsmoker, no alcohol consumption, no medical history, hospitalized in July 2021 for asthenia associated with headache and fever. During hospitalization, he presented with epigastric pain radiating to the back, with no relieving factors associated to early postprandial vomiting.

Physical examination found diffuse abdominal tenderness prevailing in the epigastrium, without guarding nor rigidity. Biological tests showed CRP level of 102 mg/l, lipasemia level of 427 UI/l (7 N). Liver function, lipidic and calcium level (Table 1) were normal as well as serum protein electrophoresis. Antinuclear antibody test was negative.

Abdominal CT scan revealed loss of lobulation and pancreatic hypertrophy without collection nor necrosis surrounding the pancreas.

Thoracic CT scan showed SARS CoV 2 pneumonia with 25% of affected pulmonary parenchyma.

Evolution under treatment was marked by reduced pain and a negative RT PCR at day 14 of hospitalization.

Table 1. Biological tests of patients.

Biological tests	Case 1	Case 2	Case 3
Hemoglobinemia (g/dl)	9.8	7.7	-
Lipasemia (UI/L)	312	793	427
CRP (mg/L)	134	96	102
ASAT (UI/L)	31	27	82
ALAT (UI/L)	18	22	33
Triglyceride (g/l)	1.71	2.20	1.06
Calcemia (mg/l)	89	76	93
Prothrombinemia	92	100	100
Albuminemia (g/l)	29	33	24
Creatinine (mg/l)	06	227	08

ALAT: Alanine Amino Transferase; ASAT: Aspartate Amino Tranferase; CRP: C Reactive Protein.

3. Discussion

Viral-attributed acute pancreatitis is an entity described in published data. Most common etiologies are mumps, coxsackievirus, Epstein-Barr virus and hepatitis A [2]. Since the beginning of the Covid-19 pandemic, many cases of acute pancreatitis have been depicted [2]-[8]. It was most common in patients with severe forms of the disease. Furong *et al.*, reported, in a 121-patient cohort, a 2% prevalence of acute pancreatitis in mild illness of Covid-19 and 17% in severe illness [4]. Pancreatic damage would be bound to ACE2 receptors located on pancreatic cells [5] [6] [7] as functional receptors for SARS CoV 2 penetration. Resulting inflammation might be behind pancreatic injury and numerous cases of diabetes. In the Schepis *et al.*'s study, SARS CoV 2 RNA was detected in a pancreatic pseudocyst sample [9], confirming pancreas involvement in Covid-19 infection. Nevertheless, the thrombogenic characteristic of Covid-19 disease can contribute to pancreatic hypoperfusion leading to pancreatitis lesions [10]. Several factors may favor overexpressed ACE2 receptors, including obesity and high blood pressure which were found in cases 1 and 2 [11].

In the observations we presented, there was no notion of alcohol consumption. Imaging did not show lithiasis and liver function, lipidic and phosphorus/calcium panels were normal. Thus, a SARS CoV 2 infection appeared to be the most likely diagnosis. The major limitation of the etiological research was the impossibility of carrying out autoimmune tests and magnetic resonance imaging because of substantial cost.

4. Conclusion

Acute pancreatitis can occur during Covid-19 infection. It should be considered in case of any acute abdominal pain. However, the imputability to the Covid-19

disease necessitates to rule out the most common causes namely biliary causes.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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