



Microbes and Infectious Diseases

Journal homepage: <https://mid.journals.ekb.edu/>

Case report

A case report of acute pancreatitis in a patient with *S. enterica* gastroenteritis

Rozeta Kamberi ¹, Edmond Puca ^{*1}, Elda Qyra ¹, Vasilika Mano ²

1- Service of Infectious Diseases, University Hospital Center, Tirane, Albania.

2- Service of Microbiology, University Hospital Center, Tirane, Albania.

ARTICLE INFO

Article history:

Received 23 March 2023

Received in revised form 30 March 2023

Accepted 30 March 2023

Keywords:

Acute gastroenteritis

Acute pancreatitis

S. enterica subsp *enterica*

Pancreatic amylase

Lipase

ABSTRACT

Gastroenteritis is a frequent pathology in developing countries. Etiological causes include viral, bacterial or even parasitic pathogens. Implication of pancreas in acute gastroenteritis is not a common event. A female patient arrived at the emergency room of the infectious disease service with fever, nausea/vomiting, profuse diarrhea, fatigue, weakness and severe epigastric pain. From the physical and laboratory examination, the patient was conscious, with epigastric abdominal pain and temperature 39°C. Laboratory examinations resulted in an increase of white blood cells, CRP threefold of normal range, pancreatic amylase and lipase over than threefold too. The abdominal ultrasonography and computed tomography (CT) scan showed pancreatic oedema. Stool culture and antibiogram showed a multi-sensitive *Salmonella enterica* (*S. enterica*) subsp *enterica*. Based on the 2012 Atlanta Classification of Acute Pancreatitis: abdominal pain, serum lipase activity (or amylase) at least 3 times greater than the upper limit of normal and characteristic findings of acute pancreatitis on CT or magnetic resonance imaging the case was classified as an acute pancreatitis by *S. enterica* subsp *enterica*. The aim of this paper is to present a case of acute gastroenteritis from *S. enterica* subsp *enterica* complicated with acute pancreatitis.

Background

Acute gastroenteritis is a frequent pathology in developing countries. Etiological causes include viral, bacterial or even parasitic pathogens. In these countries where the sanitary system of waters is not fully controlled, the presence of bacterial infections represents a worrisome factor for the public health. Despite the pathogen causes being numerous with the viral ones being more seasonal, salmonella infections are still frequent in underdeveloped and developing countries [1]. *Salmonella enterica* (*S. enterica*) serovar *typhi* is

one of the most frequent causes of gastrointestinal tract infections. *Salmonella enterica* serovar *typhi* is responsible for a wide range of pathologies such as: cholecystitis, appendicitis, osteomyelitis, peritonitis, sepsis, etc [2,3]. Despite the high incidence of this cause in our country, cases of complications of gastroenteritis from *S. enterica* serovar *typhi* with pancreatitis have not been described in the literature. Diagnosis of acute pancreatitis (AP) is definite based on the 2012 Atlanta Classification of Acute Pancreatitis. It is based on abdominal pain, serum lipase activity (or

amylase) at least 3 times greater than the upper limit of normal and characteristic findings of acute pancreatitis on computed tomography (CT) or magnetic resonance imaging [4].

The aim of this paper is to present a case report from our daily practice with AP involvement in patients with gastroenteritis caused by *S. enterica* subsp *enterica*.

Case presentation

A 17-year-old female patient presented to the emergency room of the infectious disease department with: fever, nausea and vomiting, profuse diarrhea (more than 10 discharges for 24 hours), fatigue, weakness and severe abdominal pain. The patient said that she had two days with the above symptoms, which had started instantly. Meanwhile, patient mentioned that it was the third day of her stay in Albania, as she had come through the airport from a European country. From the physical examination, the patient was conscious, with a peri-umbilical and upper abdominal pain, but without abdominal protection, temperature: 39°C, respiratory rate: 18/min, heart rate 75/min, blood pressure: 100/60 mmHg. We didn't notice rose spot, BMI was 20. Laboratory examinations resulted in an increase in white blood cells) 12400 K/uL (range 4-10.5); CRP 3.36 mg/dL (range <0.5); ALT 26 U/L (range <55); AST 34 U/L (range 5-34); pancreatic amylase 195U/L (range 8-51) and lipase 233U/L (range <60), calcium and triglycerides were in normal range. Abdominal ultrasonography and CT-scan showed pancreatic oedema. Blood and stool culture were positive for *S. enterica* subsp *enterica*. The isolation of *Salmonella* was done in both special SS media (Salmonella-Shigella and Hektoen agar). Its identification was performed with MALDI-TOFF (Matrix assisted laser desorption time of flight) method. An isolate of *S. enterica* subsp *enterica* which was susceptible to multiple antibiotics including: fluoroquinolones, aminoglycosides, cyclins, ampicillins, class II and III cephalosporins, and carbapenems. The patient was treated with ceftriaxone 2gm/day for five days, and supportive therapy (liquids plus analgesics). Even during the two days of hospitalization, the patient continued to be febrile and had 8-12 diarrheal discharges during 24 hours. On the third day of hospitalization, the patient was afebrile and the abdominal pain was significantly reduced. Pancreatic enzymes had a slight reduction. In the following days, the clinical situation of the patient

was good, without fever, without abdominal pain, without nausea/vomiting or diarrhea.

Discussion

The most frequent causes of AP are gallstones and the use of alcohol in more than 80% of cases [4-7]. We did exclude both causes, aside from the fact that the young age of our patient did not favor either of them. Meanwhile, from the infectious point of view, AP can be caused by a wide range of pathogens such as viral, bacterial or even parasitic [5,7]. Although gastroenteritis is a common pathology in developing countries, pancreatic involvement is not often encountered [8]. The case described above is an involvement of the pancreas as a result of gastroenteritis from *S. enterica* subsp *enterica*. In our case, the presence of AP was suspected because of severe epigastric pains and then confirmed with increased pancreatic enzymes and radiological examinations. It is worthwhile to be emphasized that the diagnostic criteria for acute pancreatitis are clinical (abdominal pain), laboratory (increased pancreatic enzymes) and radiological through ultrasonography, scanner examination or MRI [4,5]. Based on these criteria, the most frequent causes of AP were also excluded in this case; gallstones, alcohol, hypercalcemia, and hypertriglyceridemia. The presence of *S. enterica* subsp *enterica* in the examination of feces and the supportive treatment of the patient with liquids and analgesics plus specific antibiotic therapy allowed us to conclude that the definitive diagnosis of the patient is acute febrile gastroenteritis complicated with AP from *S. enterica* subsp *enterica*. Treatment of salmonella infections includes a wide range of antibiotics. Fortunately, in our case *S. enterica* subsp *enterica* was sensitive to many classes of antibiotics, but we selected ceftriaxone and non-ciprofloxacin due to the patient's age of less than 18 years [2,9,10]. It is known that fluoroquinolones should be selected only in cases with a specific indication under the age of 18. Fortunately, the progress of therapy in these infections was good. Patient improved within a period of 7-10 days and have no consequences afterwards.

One of the shortcomings of our study is the fact that we could not differentiate the pathogenic serovar of *S. enterica* subsp *enterica*, but on the other hand we were sure that we were dealing with an infection from salmonella species. However, so far 97% of confirmed cases in our microbiology

laboratory have been *S. enterica* and only 1 *S. typhimurium*.

In conclusion, gastroenteritis is a frequent pathology in developing countries like Albania. Meanwhile, the occurrence of AP is a rare event, at least according to the data so far, but this may help physicians to be more observant in cases where gastroenteritis is accompanied by fever and epigastric pain stronger than in common gastroenteritis.

Funding: None.

Declarations of interest: none

References

- 1-**Hartman S, Brown E, Loomis E, Russell HA.** Gastroenteritis in Children. *Am Fam Physician* 2019;99:159–65.
- 2-**Dekker JP, Frank KM.** Salmonella, Shigella, and yersinia. *Clin Lab Med* 2015;35:225–46.
- 3-**Al Kaabi S, Al Kaabi A, Al Nuaimi H.** What is beyond Salmonella gastroenteritis? A case of acute pancreatitis complicating Salmonella infection in a child: a case report and literature review. *BMC Pediatr* 2021;21:353.
- 4-**Greenberg JA, Hsu J, Bawazeer M, Marshall J, Friedrich JO, Nathens A, et al.** Clinical practice guideline: management of acute pancreatitis. *Can J Surg J Can Chir* 2016;59.
- 5-**James TW, Crockett SD.** Management of Acute Pancreatitis in the First 72 hours. *Curr Opin Gastroenterol* 2018;34:330–35.
- 6-**Leppäniemi A, Tolonen M, Tarasconi A, Segovia-Lohse H, Gamberini E, Kirkpatrick AW, et al.** 2019 WSES guidelines for the management of severe acute pancreatitis. *World J Emerg Surg WJES* 2019;14:27.
- 7-**Quinlan JD.** Acute pancreatitis. *Am Fam Physician* 2014;90:632–39.
- 8-**Crump JA, Sjölund-Karlsson M, Gordon MA, Parry CM.** Epidemiology, Clinical Presentation, Laboratory Diagnosis, Antimicrobial Resistance, and Antimicrobial Management of Invasive Salmonella Infections. *Clin Microbiol Rev* 2015;28:901–37.
- 9-**Kaplan YC, Koren G.** Use of ciprofloxacin during breastfeeding. *Can Fam Physician Med Fam Can* 2015;61:343–44.
- 10-**Diard M, Sellin ME, Dolowschiak T, Arnoldini M, Ackermann M, Hardt W-D.** Antibiotic treatment selects for cooperative virulence of *Salmonella typhimurium*. *Curr Biol CB* 2014;24:2000–2005.