
INTUSSUSCEPTION IN INFANTS WITH SARS-COV-2 INFECTION

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+359888272817*DOI: 10.31618/ESU.2413-9335.2022.4.94.1600**ABSTRACT**

The new Corona virus disease 2019 (COVID-19) first presented in Wuhan, China. The virus was spread throughout the world, causing a global health crisis. The COVID-19 pandemic poses a serious challenge to health systems around the world. As one of the measures to prevent the spread of the virus, the Bulgarian government has suspended the plan for scheduled operations, except for emergencies. However, in rare cases the disease might be present with non-respiratory symptoms. The presentation of COVID-19 as a case of intussusception in children is an atypical and rare phenomenon. Intussusception is the leading cause of intestinal obstruction in children under 4 years of age. Viral infections are the associated etiology in most cases, SARS-CoV-2 thereby being a plausible cause.

We present here a case of a 3-month-old male child who was admitted to hospital due, frequent vomiting, food refusal, dehydration, recurrent severe abdominal pain and with currant jelly stool without fever. Intussusception confirmed by ultrasound led to surgery. The child was tested for corona due to hospital admission protocols during a pandemic. Surgical findings reported intussusception of the sigmoid colon, peritonitis, without intestinal ischemia and mesenteric lymphoid hyperplasia. The COVID-19 infection was without respiratory symptoms, and there was no need for the child to remain in department of pediatric surgery and was referred to a special department for the treatment a COVID infection in children.

Some case reports introduced the presentation of COVID-19 as without respiratory symptoms in children. Ubiquitous availability of corona virus and performing COVID-19 tests for children with intussusception can lead to connection between them.

Keywords: COVID-19, intussusception, mesenteric lymphoid hyperplasia children, pediatric surgery.

INTRODUCTION

From the first described cases of SARS-CoV-2 infection in Wuhan, China to date, there have been numerous studies and reports on the mechanism of infection and its impact on various human organs. The virus spread rapidly around the world and caused a global health crisis. The COVID-19 outbreak poses a major challenge to global health systems. No effective drug has yet been found to treat COVID infection [1,2]. Vaccination, social distance, and disinfection remain the only scientifically proven means of prevention. As one of the measures to prevent the spread of the virus, the Bulgarian government has suspended the planned admission of patients for hospital treatment, except for emergencies.

COVID-19 generates a wide range of symptoms, from completely asymptomatic patients to severe manifestations mainly affecting the respiratory system, such as pneumonia, respiratory failure, shock, or multiple organ dysfunction. Gastrointestinal symptoms such as diarrhoea, nausea and vomiting are also common [3,4]. A recent study reported an increasing number of patients with gastrointestinal manifestations. There is already enough evidence of lasting consequences following COVID infection. We are talking about the so-called Post COVID syndrome, in which a series of permanent defects of different organs and systems other than the respiratory system are described.

The gastrointestinal form of COVID-19 can mimic almost any gastrointestinal disease, including that requiring urgent surgical treatment [5,6]. The manifestation of COVID-19 infection with a clinical picture of intussusception in children is atypical and rare.

Intussusception is the most common cause of intestinal obstruction in infants, usually at 4 to 10 months of age [7]. We mean of intussusception when a proximal segment of the intestine enters a more distant segment. This is the most common cause of intestinal obstruction in early childhood. The etiology of intussusception is often idiopathic but is thought to be largely due to the starting point created by mesenteric lymph node hyperplasia [8].

Mesenteric lymph nodes increase with each intestinal infection and can be a sign of neoplasm [9].

CASE REPORT

We present a case of a 3-month-old boy who was admitted to the hospital due to frequent vomiting, refusal to eat, dehydration, recurrent severe abdominal

pain and jelly stool without fever. According to the hospital admission protocol during the pandemic, the child was tested for COVID and showed a positive result.

The physical examination showed:

- Deteriorated general condition. Relaxed, sluggish and moaning. Reacts slowly to irritation, afebrile with pale pink skin and visible mucous membranes with signs of dehydration;

- Throat - slightly hyperemic palatal arches;

- Respiratory system - bilateral vesicular respiration, without wheezing;

- Cardiovascular system - rhythmic heart activity, clear tones. Heart rate - 142 / min. sO₂- 98-99%;

- Abdomen - at chest level, moderately swollen at the expense of the upper abdominal floor;

- Soft-elastic abdominal walls and weakened peristalsis. A digital rectal examination showed large stools of blackcurrant jelly.

Laboratory tests showed the following results:

- Haemoglobin – 112 g/l;

- Haematocrit - 0.33 l/l;

- Erythrocytes. – 3.97 T/l;

- Leukocytes – 12.7 g/l;

- Platelets – 474 10⁹/l;

- Clotting time – 300 sec;

- glucose – 5.6 mmol/l;

- Serum creatinine - 20.0 μmol/l;

-

- Urea – 1.3;

- Total protein - serum – 46.6 g / l;

- Serum albumin – 31.8 g / l;

- CRP – 55.4 mg / l;

- Sodium - 134.0 mmol / l;

- Potassium - 4.74 mmol / l;

- Chloride – 103.8 mmol / l.

The intussusception was also confirmed by ultrasound. Due to a long time from the beginning of the complaints to the moment of hospitalization and the presence of jelly stool, we switched to surgical treatment.

Laparotomy revealed ileocolic intussusception (Fig.1) in the right iliac fossa with multiple enlarged mesenteric nodes, without intestinal necrosis (Fig.2). Manual reduction of intussusception with Hutchinson`s maneuver and a typical appendectomy were performed. Ileopexy with single-row sero-serous sutures was made.

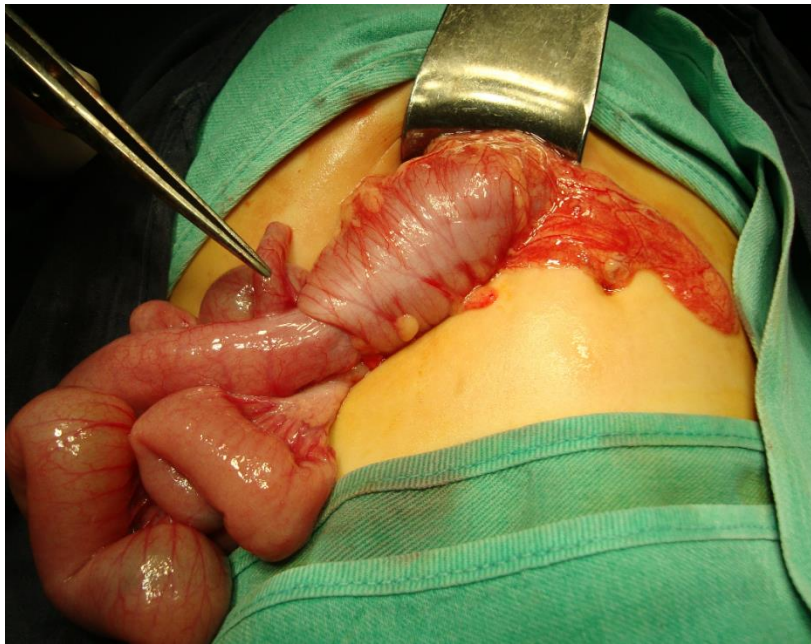


Figure.1 Ileocecal intussusception

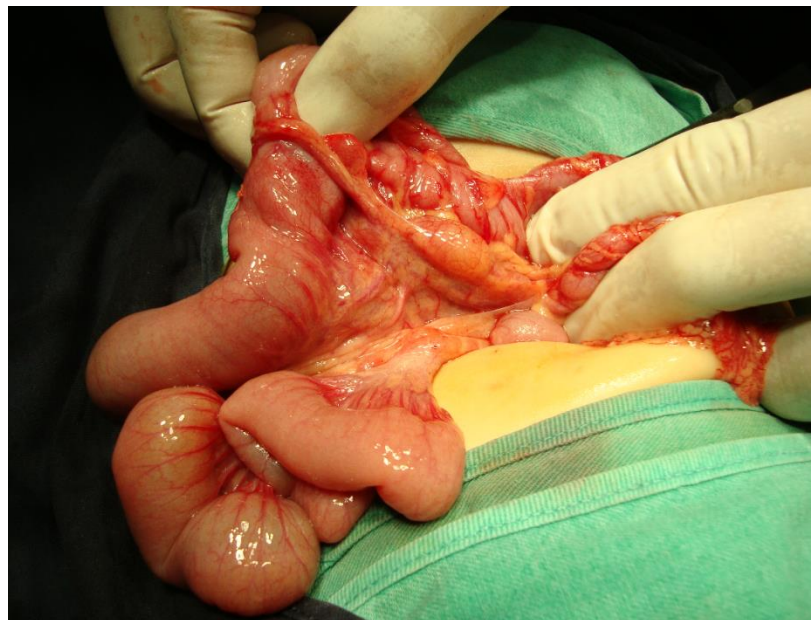


Figure 2. Enlarged mesenteric nodes, without intestinal necrosis

After surgery, the patient received conservative therapy with intravenous rehydration, antibiotics (ceftriaxone and amikacin), non-opioid analgesics, proton pump inhibitor, and probiotic. His general condition quickly improved.

The patient was discharged after 4 days of successful diet progression, normal serial abdominal examinations and monitoring of normal bowel movements.

DISCUSSION

Well-known fact is that the disease mainly affects the respiratory system. Many deaths are due to the development of respiratory failure. However, other clinical manifestations, including gastrointestinal, should be considered. With age, the regenerative capacity of the lungs gradually decreases, so that children's lungs are better prepared to recover from COVID-19[10]. The pathophysiology of

gastrointestinal manifestations is still unclear. Numerous studies have shown that the gastrointestinal tract may be affected by the SARS-CoV-2 virus, as this pathogen infects host cells through the receptor for angiotensin-converting enzyme 2 (ACE2), which is expressed in various organs such as the intestines and lungs, as well as the heart and kidneys[11,12].

The mechanism of entry of the virus into enterocytes is through ACE2 receptors. After the invasion, cytokines are released into the cell, leading to inflammatory changes, microcirculation dysfunction, which explains the clinical symptoms. On the other hand, the gastrointestinal symptoms of COVID infection are rare and are mainly limited to diarrhea or vomiting [13,14].

A study of 452 patients infected with the SARS-CoV-2 virus found that diarrhea (6.6%) and vomiting

(5.8%) were much less common than fever (43.1%) or cough (43.4%) [15].

Primary mesenteric lymphadenopathy is usually characterized by lymph node enlargement in the right lower abdominal segment without any established primary etiology. In this type, there are no visible pathological findings in imaging. It was discovered as an accidental intraoperative finding in another case. Secondary mesenteric lymphadenopathy occurs after abdominal pathologies, such as appendicitis, various viral or bacterial intestinal infections, inflammatory bowel disease, chronic granulomatous disease, systemic chronic inflammatory diseases, and neoplasms [16, 17].

Mesenteric lymphadenopathy may be the only sign of a gastrointestinal form of COVID-19 infection causing abdominal pain. This can mimic several diseases and present itself as an acute surgical abdomen requiring urgent surgical treatment [18].

In another case, we presented an 8-month-old girl infected with the SARS-CoV-2 virus that mimicked clinical symptoms of intussusception [19].

Enlarged mesenteric lymph nodes and accelerated bowel movements may be a prerequisite for intussusception [20].

We hypothesize that due to the current COVID-19 infection and known gastrointestinal manifestations of SARS-CoV-2, our patient subsequently developed intussusception due to mesenteric lymph node enlargement in the terminal ileum.

CONCLUSION

There are increasing reports worldwide of symptoms of COVID-19 infection outside the respiratory system, especially in children. Very often, the first manifestation of infection comes from the gastrointestinal tract. Therefore, we recommend that any patient in the emergency department be considered potentially infected with the SARS-Cov-2 virus.

Many studies recommend SARS-CoV-2 testing for children with gastrointestinal complaints that mimic surgical conditions. Thus, it was possible to avoid both complications of the disease and to stop the spread of infection among the population and among medical personnel in time.

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SYMPTOMS. WORLD CHILDREN CONFERENCE-II May 21-23, 2021 Nicosia / Turkish Republic of Northern Cyprus Özyay Günsel Children University Proceedings Book Volume-I IKSAD GLOBAL PUBLISHING HOUSE ISBN: 978-605-70554-8-4 www.worldchildrenconference.or, p.219-221.

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APPLICATION OF ULTRASOUND ELASTOGRAPHY IN CHRONIC VEIN DISEASE OF THE LOWER EXTREMITIES

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ПРИМЕНЕНИЕ УЛЬТРАЗВУКОВОЙ ЭЛАСТОГРАФИИ ПРИ ХРОНИЧЕСКОЙ БОЛЕЗНИ ВЕН НИЖНИХ КОНЕЧНОСТЕЙ

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«Российская медицинская академия непрерывного профессионального образования»
DOI: 10.31618/ESU.2413-9335.2022.4.94.1599*

SUMMARY

The possibility of elastography in chronic vein disease of the lower extremities was investigated.

АННОТАЦИЯ

Исследована возможность применения эластографии при хронической болезни вен нижних конечностей.

Key words: chronic venous insufficiency (CVI), ultrasonography, elastography, fiber stiffness.

Ключевые слова: хроническая венозная недостаточность (ХВН), ультразвуковая диагностика, эластография, жесткость клетчатки.

Актуальность проблемы хронической болезни вен нижних конечностей определяется как ее высокой распространенностью, так и весьма серьезными экономическими затратами при лечении данной патологии [1,2]. По многочисленным эпидемиологическим исследованиям, хронические заболевания вен встречаются почти у половины взрослого населения, сопровождающиеся объективными признаками поражения венозного русла [1]. Тяжелая степень проявления хронической венозной недостаточности (ХВН): липодерматосклероз, зажившая или активная язва имеется у 3% населения. Варикозная болезнь, различные врожденные аномалии венозной системы нижних конечностей, флебопатии, могут способствовать развитию хронической венозной недостаточности.

Клинические проявления ХВН многообразны, а проведение диагностики на ранней стадии позволяет быстрее начать лечение и минимизировать затраты. [1,2] Одним из самых широко доступных, неинвазивных методов является ультразвуковое исследование. Ультрасонография, применяемая при исследовании ХВН, позволяет визуализировать анатомические

варианты строения вен нижних конечностей, состояние клапанного аппарата, распространение венозных рефлюксов, а так же патологических процессов проходящих в просвете вен [3]. В течение многих лет стали интенсивно развиваться различные методы ультразвукового исследования. Допплерография является хорошим подспорьем для диагностики данной патологии. Благодаря ей мы можем оценить качественные и количественные характеристики кровотока в венах. Новый метод эластографии появился буквально двадцать лет назад и чаще использовался для научных исследований. Эластография- виртуальная пальпация Первый аппарат - Фиброскан определял жесткость тканей с помощью дозированной компрессии рукой на датчик, поэтому имел ряд ограничений. Затем Сарвазян А.П. усовершенствовал данный метод, дополнив его количественными характеристиками. Это эластография сдвиговой волны (эластометрия), то есть виртуальная биопсия. Многие ультразвуковые аппараты оснащены данной методикой. Исследование позволяет, не прибегая к биопсии, увидеть патологические изменения, наличие фиброзного процесса. [4,5] Мы можем отслеживать динамику в измененных тканях, эффективность