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A Successful Pyloromyotomy In A Child With COVID-19 Infection

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Short title: A pyloromyotomy in COVID-19 positive patient

Abbreviations: Infantile Hypertrophic Pyloric Stenosis (IHPS), Severe acute respiratory syndrome coronavirus 2 (SARS-CoV2), novel coronavirus disease 2019 (COVID-19), C-reactive protein (CRP)

Article Summary: This article presents a case of a child with COVID-19 infection who underwent a successful pyloromyotomy.

Abstract

Infantile Hypertrophic Pyloric Stenosis (IHPS) is the most common cause of gastric outlet obstruction in children, usually manifesting between 2 and 6 weeks of age by non-bilious vomiting. Although the COVID-19 pandemic has dominated the world since the beginning of 2020 causing the restructuring of healthcare delivery, patients still require high-quality medical care concerning other diseases. We report a 6-week infant with confirmed COVID-19 infection, who developed mild symptoms after a successful pyloromyotomy. Our aim is to encourage other professionals not to delay the necessary treatment in asymptomatic COVID-19 patients, considering the proper use of personal protective equipment, as it may worsen the course of the underlying disease.

Keywords :Pyloromyotomy, Child, COVID-19, Infection

Abstrakt

Wrodzone przerostowe zwężenie odźwiernika to najczęstsza przyczyna niedrożności ujścia żołądka u dzieci. Najczęstszym objawem są wymioty bez domieszki żółci występujące między 2 a 6 tygodniem życia. Pandemia COVID-19 spowodowała znaczące zmiany w dostępie do opieki zdrowotnej. W tej pracy przedstawiamy przypadek 6-tygodniowego niemowlęcia z potwierdzoną infekcją SARS-CoV2, które rozwinęło łagodne objawy infekcji po zabiegu pyloromiotomii. Ten przypadek pokazuje, że nie należy opóźniać niezbędnego leczenia u asymptomatycznych pacjentów z COVID-19, ponieważ może to pogarszać przebieg choroby podstawowej.

Słowa kluczowe: Pyloromotomia, Dziecko, Covid-19, Infekcja

Introduction

Infantile Hypertrophic Pyloric Stenosis (IHPS) is a condition affecting up to 5 cases per 1000 birth, more often among male patients. It usually presents around 1 month of age with non-bilious vomiting preceded by asymptomatic period. Although many studies have shown a decrease in incidence of IHPS in recent years, it is still the most common cause of gastric outlet obstruction in children.[1-3] The etiology and pathogenesis remain unknown-genetic factors, bottle-feeding and firstborns are listed among risk factors.[4] A recent study showed that omega 3 supplementation during pregnancy is significantly associated with a lower risk of IHPS.[4] On the contrary, folic acid supplementation showed no significant association with IHPS incidence.[5] As COVID-19 pandemic emerged the world, the medical workers had to learn how to cope with this novel disease, but also find new ways of delivering standard medical care to those in need.[6] Here we present a case of a 6-week infant with positive SARS-CoV2 swab, who underwent a successful pyloromyotomy and presented COVID-19 symptoms after the procedure.

Case Report

A 6-week old infant was admitted to the Pediatric Hospital due to projectile vomiting for a couple of hours. Up to this point the child did not present any symptoms. He was breastfed with an addition of synthetic milk (Bebilon HA) for the first 4 weeks of life. For the last two weeks the patient was fed with goat milk. Due to confirmed SARS-CoV2 in patient's mother a nasal swab from the boy was tested and returned positive.

On admission the physical examination revealed abdominal distension and slow bowel movements. The vital signs were normal and the child did not present any symptoms regarding the respiratory system.

The X-ray of the abdominal cavity in vertical position (Figure 1) showed fluid level in the stomach, the paucity of gas in small and large bowel and bilateral central lung shadowing.

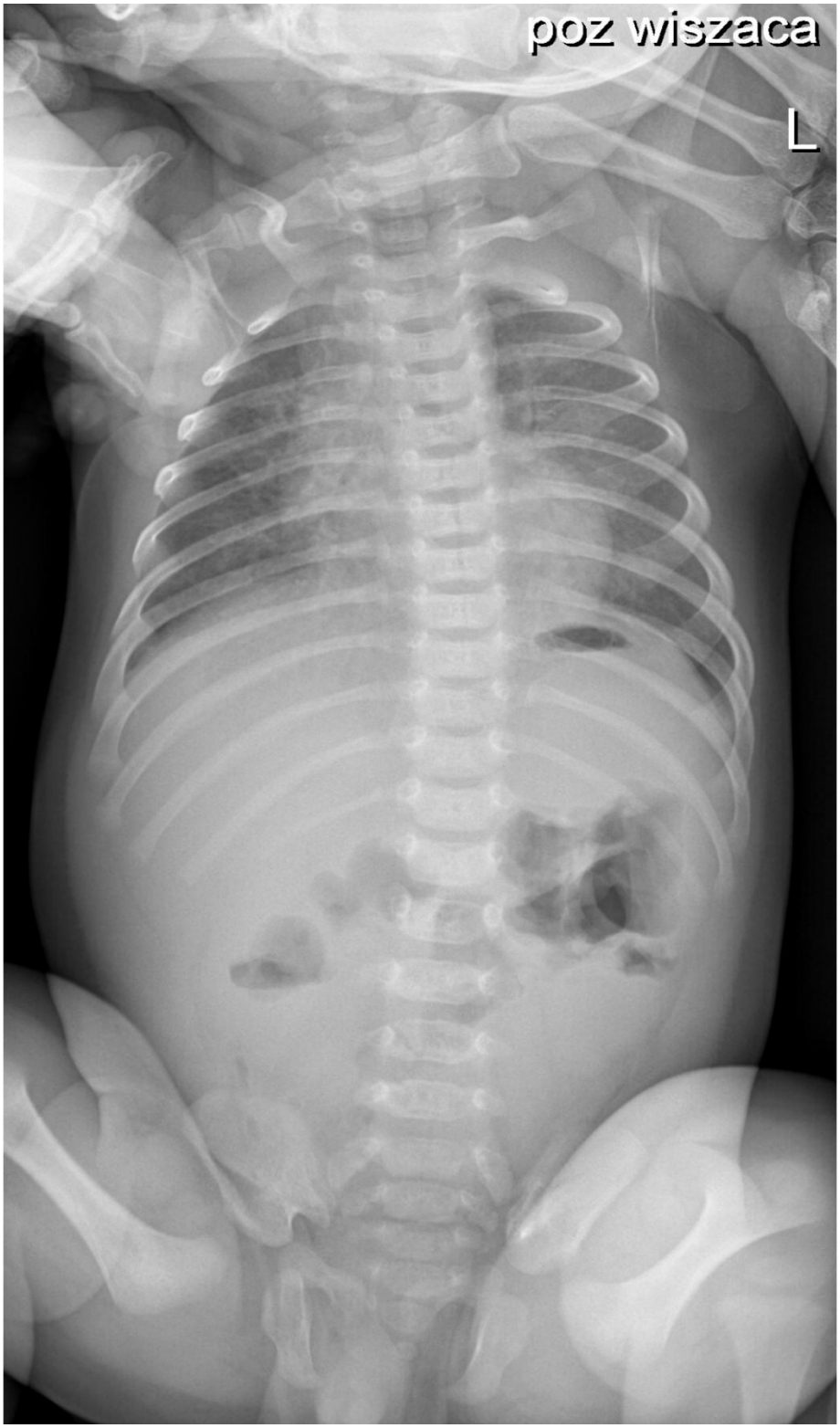

Figure 1. The X-ray of the abdominal cavity in vertical position on admission.

The following ultrasound revealed thick (6-7 mm) and elongated (20 mm) pylorus.

The patient underwent the Ramstedt-Weber pyloromyotomy with no complications. After the procedure he was given glucose orally and no vomiting was observed. The oral intake of milk was initiated on the first day after the procedure with increasing portions with good tolerance. On the first day after the procedure the patient's temperature has risen up to 38^{o}C. No other symptoms were present. The biochemical tests were within normal range apart from elevated CRP (39,99 mg/l). The iv ceftriaxone was started. On the following day the child vomited once and developed a cough. The inhalation with 0,9% NaCl was started and a control nasal swab was taken and returned positive for SARS-CoV2. The patient showed rapid improvement with no fever or vomiting and decreasing CRP (2,26 mg/l) in the next days of hospitalization. On the seventh day after the surgery an anteroposterior chest radiography (Figure 2) was taken revealing bilateral central lung shadowing, similarly to the X-ray on admission.

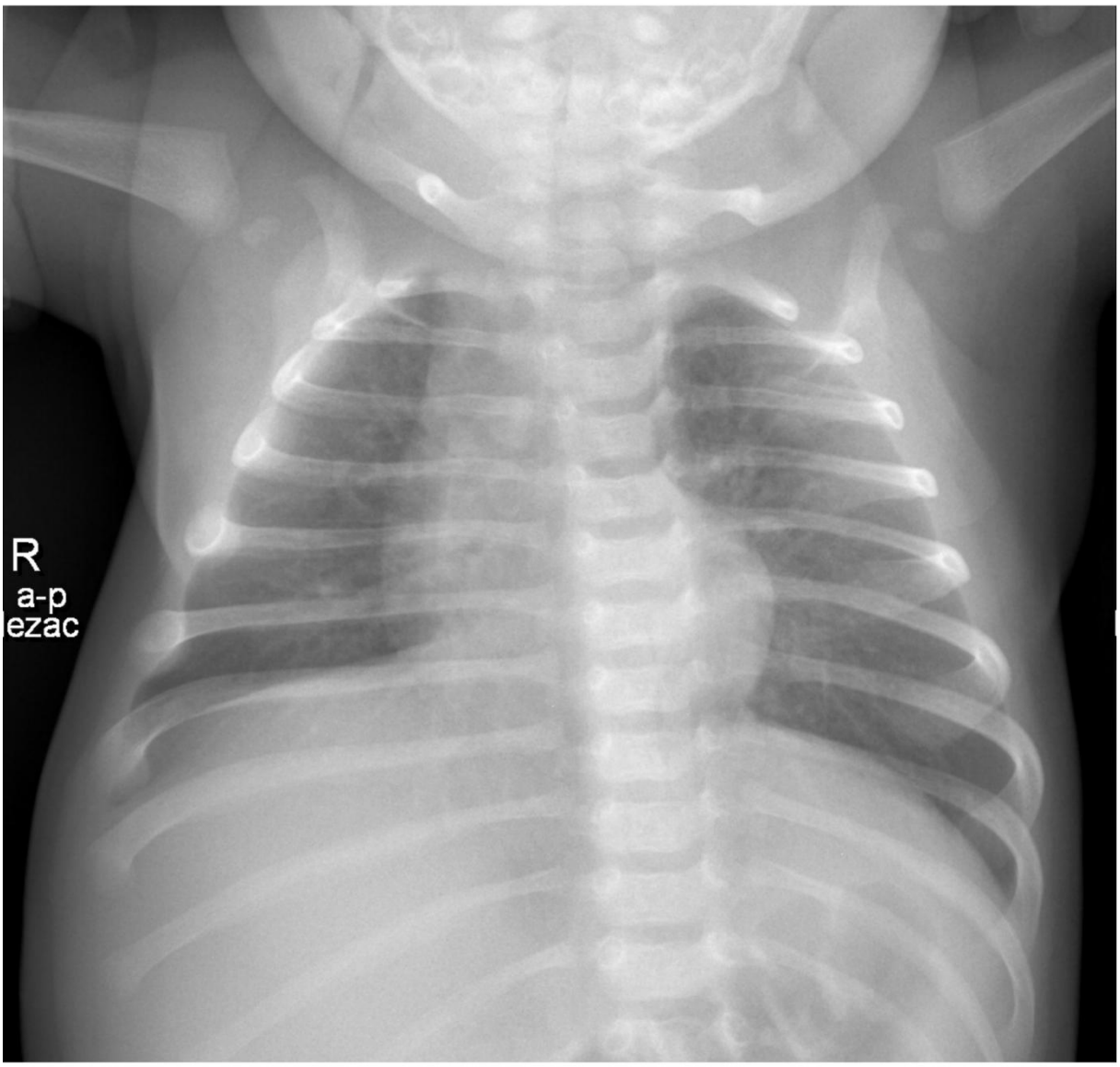

Figure 2. An anteroposterior chest radiography.

The child was discharged 8 days after the surgery in a good condition-vital signs were in normal range, no respiratory symptoms were present and a good tolerance of the increased milk portions were obtained. The time-course of the patient hospitalization has been gathered on Figure 3.

Figure 3. The time-course of the patient hospitalization

Discussion

The onset of infection symptoms in short time from the episodes of vomiting in our patient, might suggest the differential diagnosis of aspiration pneumonia. After careful assessment and lack of more specific symptoms (more severe and longer course of the disease, usually located in posterior segments of the upper lobes or upper segments of the lower lobes, the necessity of broad-spectrum antibiotic treatment) our approach was leaned towards the COVID-19 infection.[7]

COVID-19 pandemic has not only significantly changed the healthcare accessibility for patients, but it has also challenged the medical staff in management of other diseases. Our case presents an example of the SARS-CoV2(+) patient with a condition requiring urgent treatment. Although our patient developed mild symptoms after the surgery and it cannot be excluded that the procedure decreased his immunity, we think that delaying the treatment of IHPS would worsen the course of COVID-19 concerning the probable developing of the acid-base imbalance. Loss of hydrogen ions caused by excessive vomiting leads to metabolic alkalosis. Loss of chloride ions and volume depletion results in higher reabsorption of already elevated bicarbonate which exacerbates the ongoing alkalosis. In addition, coexisting hypokalemia and hypocalcemia would induce the risk of life-threatening arrythmias.[8] We would like to emphasize the importance of not delaying the necessary treatment, especially in asymptomatic patients suffering from COVID-19, considering the proper use of personal protective equipment.

Contributors' Statement

Drs Kowalska, Matuszczak and Dębek conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript.

All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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