Perforated Duodenal Ulcer in a 14-year-old Epileptic Boy

Laura I. Alolayan1, Atheer S. Alotaibi1, Salwa R. Alrashed Alhumaidi1, Haya A. Alorainni1, Mohammed A. Alzahrani2*

1King Abdullah International Medical Research Center / King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia
2King Abdullah International Medical Research Center / King Saud bin Abdulaziz University for Health Sciences, Surgery Department - King Abdulaziz Medical City- NGHA

Received: 06 September, 2016; Accepted: 28, September, 2016; Published: 07, October, 2016

*Corresponding author: Mohammed A. Alzahrani, Department of Surgery, Deputy Chairman, Quality Management and Patient Safety, Director of Research Unit, Consultant Surgical Oncologist and Endocrine Surgeon, King Abdulaziz Medical City- NGHA King Abdullah International Medical Research Center / King Saud bin Abdulaziz University for Health Sciences, P.O. Box 22490, Riyadh 11426, Saudi Arabia, Tel no: +966 54 908 8886; E-mail: zahranimo@NGHA.MED.SA

Abstract

A rare case of perforated duodenal ulcer in an adolescent patient was reported in King Abdulaziz Medical City (KAMC) in Riyadh, Kingdom of Saudi Arabia. Over the past 20 years, this is the first case to be found in this age population in KAMC institution. A fourteen-year old boy with a known case of epilepsy presented to the emergency medicine department after 12 hours of severe abdominal pain and vomiting. Upon examination, his abdomen was peritonitic. An upright abdominal film showed air under diaphragm. The patient was taken immediately to the operating room and underwent laparotomy with graham omental repair of an anteriorly based duodenal ulcer. In our patient, Helicobacter pylori was negative. Despite the rarity of perforated duodenal ulcer in pediatric population, the case we report is even more interesting in respect to the child’s past medical history. This report adds to our knowledge and understanding of such condition.

Keywords: Pediatric peptic ulcer disease; Pediatric duodenal perforation; Perforated viscus; Acute abdomen; Abdominal pain; H. pylori

Introduction

Peptic Ulcer Disease (PUD) is known to be uncommon among pediatric age group. It accounts for less than 5% of pediatric patients who present with abdominal pain [1]. Male adolescents are more prone to PUD when compared to females’, however no gender differences were found in children and infants [2].

Peptic ulcer disease is rarely suspected as a cause of surgical abdomen in pediatric age group. The diagnosis is often missed unless the patient presents with PUD complications such as bleeding and perforation and in some cases the diagnosis is made after laparotomy is done [3]. In emergency setting, more common diagnoses of free air under diaphragm, such as perforated appendicitis, are usually considered rather than Perforated Duodenal Ulcer (PDU). Many etiologies are considered to cause PDU among this age of population [4]. It can be categorized to primary and secondary causes. Helicobacter pylori (H. pylori) infection is considered as a primary cause while secondary ones include medications like non-steroidal anti-inflammatory drugs, lymphoma and malaria [5, 6].

Case Description

A fourteen-year old Saudi boy with a known case of epilepsy presented to the emergency room after 12 hours of severe right upper quadrant abdominal pain of colicky nature, radiating to the right shoulder. The pain was aggravated by food with no alleviating factors. The patient additionally reported nausea and non-bloody vomiting. He denied history of change of bowel habits, contact with sick patients or animals, trauma, recent travel nor eating from outside restaurant. He was on anti-epileptic medication (Valproic acid). As for his family history, there is no history of peptic ulcer disease, inflammatory bowel disease or gastrointestinal cancer.

During physical examination, his vital signs were unremarkable. However, he appeared in pain, and there was rebound tenderness and guarding all over his abdomen. Chest and cardiovascular examinations were clear.

Upon reviewing his laboratory results, white blood cell count was the only elevated parameter (13.3 x 10^9/ L). Abdomen / KUB X-Ray showed no bowel obstruction but showed air under diaphragm (figure 1). First impression was perforated appendicitis or perforated viscus. Patient was transferred to the ICU in a stable condition and commenced on 1000ml of NaCl 0.9% bolus. He was also given intravenous Tazocin and PCA morphine. He was then sent to the operating room and initially underwent diagnostic laparoscopy. Reactive chemical peritonitis was found with adhesion of omentum over the right hypochondrium. Laparotomy was performed and found a perforation in the anterior wall of the first part of the duodenum so graham
patch was applied. No other pathology was identified. His post-operative course was unremarkable. Serum gastrin level was normal and *H. pylori* immunoglobulin’s returned to be negative. Patient was discharged four days later in good condition. The patient did not complain of any gastrointestinal symptoms and no recurrence was noted at 2 years of his follow up.

**Discussion**

Peptic ulcer perforation is uncommon in children and is rarely suspected as a cause of acute abdomen. In children, peptic ulcer can be primary associated with Zollinger-Ellison syndrome, sickle cell anemia or secondary to medications like non-steroidal anti-inflammatory drugs or physiological stress such as burns and head trauma [7]. Although the prevalence of the *H. pylori* infection has declined, it is still considered high in Asia [8]. Pediatric patients most commonly acquire the infection from their mothers, likely as a result of sharing utensils [9].

According to published cases in literature, PDU is more common among male adolescent. A study done by Hua et al [2] reviewed 52 cases of perforated ulcer in pediatric population. More than 80% were male and 90% were adolescents between the ages of 14 to 18. According to Drumm b et al [10] it was noted that the most common etiologies of PDU in patient less than 10 years of age were attributed to medications like non-steroidal anti-inflammatory drugs, lymphoma and malaria (secondary causes). While for the patients above 10 years, it was found that they had a higher incidence of recurrence (67%).

The world prevalence of *H. pylori* varies from 10% in North America and reaching to as high as 80% in South America and Africa. In Venezuela the prevalence of *H. pylori* in children living in rural areas was 67% [11]. Muhsern et al. [12] found similar variation in their results of a prospective study conducted on some Israeli Arab children and attributed their findings to the different socioeconomic statuses of their population. An 8-year prospective study enrolled 237 children with suspicion of PUD. The diagnosis was confirmed in 32 patients out of which 90.6% were infected with *H. pylori* [13]. Another study, conducted in Japan, enrolled 100 children with duodenal ulcer and 43 with gastric ulcer. *H. pylori* prevalence was 83% and 44.2% respectively [14]. There were limited reported studies in the literature on the incidence of *H. pylori* in children with PDU. However, Yildiz et al. included 9 children with confirmed PDU five of whom had positive urea breath test for *H. pylori* [15].

Clinical manifestations suggesting perforated duodenal ulcer or gastrointestinal bleeding vary from severe sharp abdominal pain, bloody or coffee-like vomitus to black or bloody stools. Patients could also complain of shoulder pain due to diaphragmatic irritation and abdominal distention as a result of peritonitis irritation [16].

Initially, an active search for an underlying cause of GI symptoms is warranted. *H. pylori*, then, should be tested in children with positive family history of gastric cancer or children with refractory anemia and to confirm the eradication of the disease. There are multiple methods to diagnose *H. pylori*, starting with the non-invasive test as in the detection of antibodies in serum, urine or saliva, antigen in stool or a urease breath test. Gastroscopy with a biopsy, on the other hand, is considered as an invasive method [17]. Highest level of accuracy can be achieved by endoscopy followed by urea breath test and stool *H. pylori* antigen test which has been more frequently used [18].

The diagnosis of perforated duodenal ulcer is often missed in the emergency room due to its low incidence in pediatrics and low index of suspicion. Children usually present with shock that carries higher morbidity and mortality risk than adult patients. They also suffer more from post-operative complications due to the delay in diagnosis. Often, patients undergo laparoscopy or laparotomy with graham omental repair after emergency supportive therapy. Then, eradication of *H. pylori*, if positive, should be commenced.

The case presented highlights a rare entity of perforated duodenal ulcer in a pediatric patient that is often overlooked and misdiagnosed by physicians. Therefore, it is very important for the emergency physician to have a high index of suspicion and realize the potential morbidity and mortality of this disease in pediatric age group.

**Acknowledgements**

Declarations

Conflict of Interest: NA

Ethical Approval: NA

Clinical trial registration: NA

**References**

Perforated Duodenal Ulcer in a 14-year-old Epileptic Boy


