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Large Volume Hematemesis Caused by Deferaxirox in a 4 Year-Old- Boy Diagnosed with Thalassemia Major: A Case Report and Review of Literature

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1. Abstract

Upper gastrointestinal ulceration and hemorrhage have been reported in patients, including children and adolescents, receiving deferasirox. Multiple ulcers have been observed in some patients. There have been reports of ulcers complicated with digestive perforation. Physicians and patients should remain alert for signs and symptoms of gastrointestinal ulceration and hemorrhage during deferasirox therapy. In case of gastrointestinal ulceration or hemorrhage, deferasirox should be discontinued and additional evaluation and treatment must be promptly initiated.

2. Introduction

The causes of UGIB (upper gastrointestinal bleeding) can be categorized by age groups. In newborns the predominant causes include coagulation disorders such as vitamin K deficiency, cow milk intolerance, gastritis from stress, sepsis, and trauma from the placement of nasogastric tubes [1]. From 1 month to 1 year of age, the most prevalent causes are caustic ingestions, duplication cysts, foreign body ingestion, stress esophagitis, medication-induced bleeding (eg, nonsteroidal anti-inflammatory drug [NSAID] use), and peptic ulcer bleeding [1]. From 1 to 5 years of age, causes include erosive esophagitis, gastritis, caustic ingestions, peptic ulcer bleeding, varices, and vomiting-induced bleeding, for example, from a Mallory-Weiss tear [1].From ages 5 to 18 years, bleeding can arise from coagulation disorders, gastritis, Dieulafoy lesions (an anomalous artery located in the digestive tract), erosive esophagitis, peptic ulcer disease, caustic ingestions, and vomiting-induced bleeding [1].Crohn's disease is an uncommon cause of UGIB in children and adolescents [2,3].Certain foods may create confusion for children and parents by mimicking the appearance of blood in vomitus [2,3]. We would like to present a child with large volume hematemesis caused by a deep ulceration of duodenum during treatment with deferasirox

3. Case Presentation

Our patient is a 4-year-old boy diagnosed with beta thalassemia major at the age of 7 months old. He is the second child of an Albanian couple without consanguinity. His parents were carriers of beta thalassemia but without any health problems. After diagnostic with beta thalassemia our boy was transfused rarely because the hemoglobin level was between normal range. Last 6 months he was transfused every month and recently he was transfused every two weeks to maintain a normal level of hemoglobin. Despite blood transfusions he was taking acid folik and vitamin c. Last 6 months was added deferasirox therapy one tablet per day doubled in two tablets last three months. One month after therapy with two tablets deferasirox per day our boy presented abdominal pain and minimal hematemesis. He was not send to hospital because of covid 19 pandemic and secondly the boy has been quite well after this episode. Her mother thought that hematemesis was caused by an accidental abdominal trauma occurring at the same day. Two month later he was rushed to our hospital because of severe hematemesis. We performed an upper digestive endoscopy. Esophagus and stomach were completely normal but after pylorus was a catastrophic image of a severe ulceration with active bleeding (Figure 2). We used adrenaline 1:10000 to stop bleeding and after the procedure we started high doses of omeprasole. An abdominal CT performed a day later excluded a neoplastic invasion of duodenum. After therapy with high doses of omeprasole our patient was without any complain.

Laboratory results were as follows: WBC=13.9x 103/mm3, RBC=4.5x 106/mm3, HGB = 9.5g/dl, PLT =459x 103/mm3.Abdominal ultrasound was normal. Liver and kidney function test were normal. Biopsy taken in stomach excluded H pylori infection. Antigen of H pylori in stools resulted also negative. After 5 days of omeprasole iv we discharged him with oral omeprasole at home. Five days later he was rushed to emergency room because of large volume hematemesis (Figure 1). Hgb level was 4 gdl. He was pale and peripheral pulses were very weak. After an emergency transfusion he was send immediately to surgery for intervention. During duodenotomy was noticed a deep ulceration (Figure 3). This zone was resected and later was performed an anastomosis between stomach and duodenum (Figure 4). Follow up was uneventful

Figure 1: Large volume hematemesis

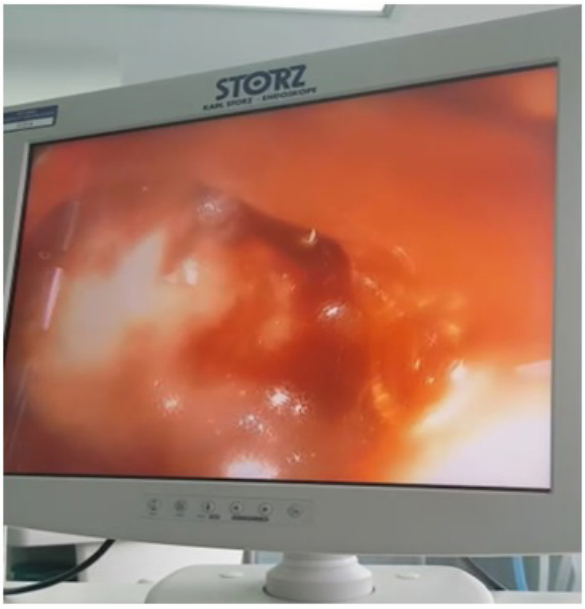

Figure 2: An ulcerative mass after pylorus during upper endoscopy

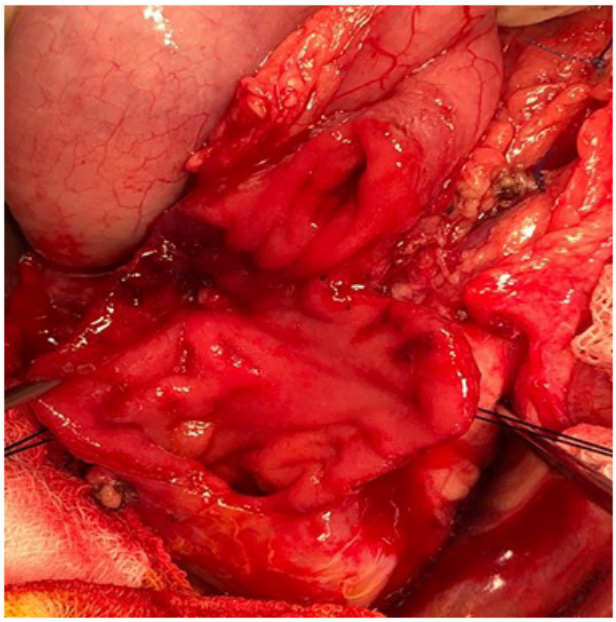

Figure 3: A deep ulceration was noticed at the first part of bulb after duodenotomy

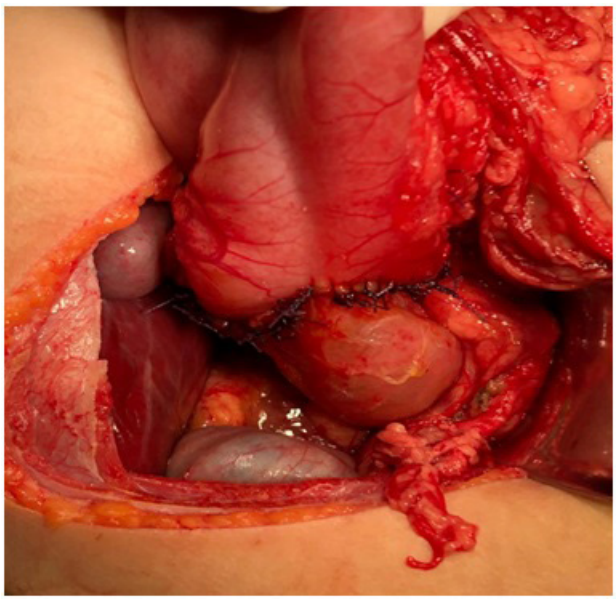

Figure 4: Anastomosis between stomach and duodenum

4. Discussion

Risk factors for UGIB vary. NSAID use and Helicobacter pylori infection should be considered in children with severe UGIB. The observed risk of UGIB with NSAIDs is 7.2 per 100,000, based on a study of 55,785 children [4]. The risk of developing UGIB with NSAID use is greater in the 2-month-old to 7-year-old age group (odds ratio [OR], 14.1) versus the 8- to 16-year-old age group (OR, 3.4) [5]. H. pylori has been found in up to 49% (41 of 84) of children presenting with UGIB [6]. This infection represents an important risk factor, especially in children with hereditary hemorrhagic disorders such as hemophilia [7]. In our case histology report and stool antigen for H pylori resulted both negative. NSAID are not used by our patient. So, we have excluded two main causes

of severe hematemesis in our boy.

Multiple disorders can contribute to the development of an UGIB in pediatric patients. Hematologic disorders, such as hemophilia A and B and Von Willebrand disease, predispose patients to UGIB secondary to the increased risk of bleeding mucosal membranes [7]. Conditions such as biliary atresia, portal vein thrombosis, primary sclerosing cholangitis, autoimmune hepatitis, Budd-Chiari syndrome, and cystic fibrosis predispose patients to UGIB through the development of portal hypertension, which can lead to the formation of varices, a known cause of UGIB [8]. Fortunately, our boy had not any association condition to risk a severe UGIB despite beta thalassemia major which was well controlled.

Other risk factors include peptic ulcer disease, portal hypertension or varices, and bleeding disordersm [9]. We excluded portal hypertension because he was investigated several time by his hematologist related to thalassemia major. Liver function was normal and ultrasound did not reveal anything. Furthermore, upper endoscopy showed a normal esophagus without varices. Bleeding disorders were excluded by his family history and lab examinations. The only important finding we have been duodenal severe ulceration and use of deferasirox. The main reason of this large volume hematemesis in our case was deferasirox use causing a deep duodenal ulcer. We chose open surgery as the best procedure to solve this case because of large volume hematemesis and the emergency of intervention. After surgery we stopped deferasirox use and the follow up was uneventful.

5. Conclusion

Physicians and patients should remain alert for signs and symptoms of gastrointestinal ulceration and hemorrhage during deferasirox therapy. In case of gastrointestinal ulceration or hemorrhage, deferasirox should be discontinued and additional evaluation and treatment must be promptly initiated

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