CASE REPORT

Case Report: Peptic ulcer disease following short-term use of nonsteroidal anti-inflammatory drugs in a 3-year-old child

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Alin Dumitru Ciubotaru, Carmen-Ecaterina Leferman

Department of Pharmacology - Medical Specialties II, “Grigore T. Popa” University of Medicine and Pharmacy, Iasi, 700115, Romania

Abstract

Background: Peptic ulcer disease (PUD) affects 1-2 per 1000 people annually in the USA, the UK and Europe, and occurs less frequently in children than in adults. PUD in children occurs mainly during the second decade of development. Among risk factors, nonsteroidal anti-inflammatory drugs (NSAIDs), commonly used to manage acute febrile illness or pain in healthy children, is rarely reported to lead to PUD and upper gastrointestinal bleeding.

Case presentation: We present a rare case of upper gastrointestinal bleeding following a low dose ibuprofen treatment in a 3-year-old female. The patient with a family history of peptic ulcer was admitted for fever, coffee-ground vomiting and abdominal pain. The clinical examination revealed an altered general health status with a distended and mildly tender abdomen moving normally with respiration as well as normal stool. The initial laboratory test indicated anemia with reticulocytosis. During the first hours of hospitalization, the patient had a second episode of coffee-ground vomiting. An upper digestive endoscopy with biopsy was performed in the following six hours revealing a non-bleeding gastric ulcer at 2 cm from pylorus. Helicobacter pylori testing was negative. The patient was treated with a proton pump inhibitor (esomeprazole 10 mg/day) for 2 months. There were no further gastrointestinal symptoms and hemoglobin values returned to normal, indicating resolution of her gastrointestinal bleeding.

Conclusion: The short-term utilization of NSAIDs in the appropriate dosage can lead to PUD, and considering the risk factors before administration can lead to an appropriate management.

Keywords

peptic ulcer disease, upper gastrointestinal bleeding, nonsteroidal anti-inflammatory drugs, proton pump inhibitors, children
Corresponding authors: Alin Dumitru Ciubotaru (alin-dumitru-d-ciubotaru@d.umfiasi.ro), Carmen-Ecaterina Leferman (carmen-ecaterina-cd-leferman@d.umfiasi.ro)

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Introduction
Peptic ulcer disease (PUD) affects 1–2/1000 people annually in the USA, UK and Europe and has been gradually decreasing. An explanation could be the declining prevalence of Helicobacter pylori infection. While the rate of infections is decreasing, the rate of complications remains static, likely due to an aging population which has an elevated usage of ulcerogenic medication.

PUD occurs less frequently in children than adults. Epidemiological data are limited due to the rareness of the disease. An extensive study estimated the prevalence of ulcers and/or erosions in European children at 8.1%, occurring mainly during the second decade of development. In the USA, 17.4% of pediatric patients are diagnosed with upper gastrointestinal ulcers each year.

PUD is a heterogeneous disease defined by an imbalance between mucosa-protective and aggressive factors in the presence of risk factors including: H. pylori infection, chronic disease (inflammatory bowel disease, rheumatic diseases) and drug use, particularly nonsteroidal anti-inflammatory drugs (NSAIDs). In practice, NSAIDs are commonly used to manage acute febrile illness or pain in healthy children. One adverse reaction is acute gastrointestinal bleeding associated with short-term NSAIDs use, with a high rate of hospitalization and mortality in developed countries. The adverse effect of short-term utilization of NSAIDs among children and their association with PUD are less clear.

We present a rare case of upper gastrointestinal bleeding following a low dose of ibuprofen in a 3-year-old to underline potentially severe side-effects of short-term NSAIDs use at appropriate doses in children.

Case presentation
A 3-year-old-female, with a family history of peptic ulcers, was admitted with fever, coffee-ground vomiting and abdominal pain. The mother stated the patient received two weight-appropriate doses of ibuprofen and a dose of paracetamol, both administered within an appropriate time interval in the previous 24 hours for fever control. The patient had a positive medical history of upper respiratory tract infections with febrile seizures and interstitial pneumonia treated with antipyretics and clarithromycin, respectively. The patient is allergic to cephalosporin and Augmentin. No immune deficiency disease was documented.

Clinical examination revealed general malaise, pallor, fever, pharyngotonsillar congestion and productive cough, normal breath sound, a distended and mildly tender abdomen moving normally with respiration and normal stool. The patient weighed 15 Kg and measured 88 cm tall.

Initial laboratory tests indicated anemia with reticulocytosis (Hematocrit 29.7%, Hemoglobin 9.6 g/dl, reticulocytes 36/1000) and lower total protein (55.2 g/L), characteristic of bleeding. Remaining laboratory results were normal, including coagulation tests.

Soon after hospitalization, the patient had a second episode of coffee-ground vomiting.

An upper digestive endoscopy with biopsy was performed revealing a non-bleeding gastric ulcer at 2 cm from pylorus (Figure 1). H. pylori testing was negative.

Based on this data, a diagnosis was made of NSAID-induced gastric ulcer, causing upper gastrointestinal bleeding.

Figure 1. Endoscopic imaging. This shows a non-bleeding gastric ulceration measuring 2.5 x 2 cm with edematous rim located 2 cm from the pyloric ring; pale gastric mucosa, fluid stasis and food debris; snake skin appearance of gastric mucosa in the fundus.
During hospitalization, perfusion with glucose and electrolytes was administered in order to compensate for fluid loss. The patient was treated with a proton pump inhibitor (esomeprazole 10 mg/day) for 2 months.

There were no further gastrointestinal symptoms. Hemoglobin values returned to normal, indicating resolution of gastrointestinal bleeding.

Discussion
Upper gastrointestinal bleeding in a 3-year-old following short-term NSAIDs use is an uncommon presentation. Similar cases have been reported in literature, but the adverse effects of short-term NSAIDs use among children and their association with PUD is not completely understood. However, some studies offer compelling data indicating certain risk factors, primarily: the child’s age, NSAIDs consumption and \textit{H. pylori} infection [4-6].

PUD seems to primarily affect patients between 10–20 years old. A retrospective cohort study reported a lower median age for those with gastric ulcers, than those with duodenal ulcers. Our patient confirms this ratio.

The second important factor is NSAIDs consumption. The probability of PUD increases with the duration of therapy, dose and presence of risk factors, including positive familial history or drugs coadministration [7]. Thus, despite a low dose of ibuprofen, the gastric ulcer (GU) in this case can be explained in part by a positive family history and association with a dose of paracetamol. Moreover, some studies conclude that short-term NSAIDs use is highly correlated with GU [8].

The association between short-term NSAIDs use and proton pump inhibitors (PPIs) can theoretically reduce the risk of upper gastrointestinal bleeding in children. Although coadministration of NSAIDs and PPIs is considered safe to reduce adverse gastrointestinal effects in adults, there is not sufficient data about this drugs association in the prevention of short-term NSAIDs-PUDs in children.

The third important risk factor in PUD, \textit{H. pylori} infection, was negative in our case. Some studies suggest a weaker association between \textit{H. pylori} and PUD in children as compared with adults [9,10]. However, this infection is a well-recognized cause of chronic gastritis and plays an important role in the pathogenesis of PUD in children [11].

Patients who develop gastrointestinal bleeding caused by NSAIDs-associated ulcers should discontinue use. Therapeutic strategies in these cases depend on the severity of presentation. Pharmacologic, endoscopic and surgical techniques have been developed to achieve hemostasis. In cases of massive bleeding, immediate endoscopic or surgical intervention is required. Scoring systems for upper gastrointestinal bleeding in children, laboratory tests and blood transfusion requirements are still under development [12-14]. In the present case, clinical presentation with two episodes of isolated hematemesis (coffee-ground vomiting) and endoscopic examination findings (non-bleeding gastric ulcer) correlated with laboratory tests indicated pharmacologic management.

Conclusion
Short term NSAIDs use in appropriate doses, commonly prescribed to control fever in children, can lead to PUD. Before administration, risk factors such as other antipyretic medication use, or a suggestive familial history must be considered. Doctors should inform caregivers of the risks involved and encouraging limited NSAIDs use.

Data availability
All data underlying the results are available as part of the article and no additional source data are required.

Consent
Written informed consent for the publication of this case report was obtained from the parents of the patient.

References


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