

A RARE CASE OF GASTRIC PERFORATION IN AN ADOLESCENCE AFTER AN ALCOHOL ABUSE

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Abstract

Nowadays the diagnosis of gastro-duodenal ulcers has been made easy due to the discovery of CT scan and endoscopy. Gastric ulcer is rare in children compared to adults, *Helicobacter pylori* infection is the main cause of gastro-duodenal ulcer in children. Other risk factors are none steroidal anti-inflammatory drugs (NSAIDs), steroids, immunosuppressive drugs and stressful events

Key words: Alcohol abuse, antisecretory medication, gastric resection, *helicobacter pylori*, perforated gastric ulcer.

Introduction

Gastro-duodenal ulcer can be defined as gastric or duodenal mucosa discontinuity with penetration of muscular mucosa and sub-mucosa. Primitive ulcer causes gastric dysfunction (an increase in gastric hydrochloric acid production): it is mainly a single lesion located in the minor curvature of the stomach and on the antrum. Secondary ulcer is caused by the use of certain drugs and also by stress. It has multiple locations in different parts of the stomach.

About 20% of duodenal ulcers are hereditary: with increased basal acid output, increased maximal acid output and rapid gastric emptying. Alarm signs for perforated ulcer with gastro-duodenal hemorrhage are: sudden abdominal pain, black or red stool or “coffee ground” vomit.

The major cause of ulcer is *Helicobacter pylori* infection, followed by the use of NSAIDs (aspirin, ibuprofen etc.), steroids, antineoplastic drugs, stressful events (shock, sepsis, burns, major trauma, intracranial hypertension, surgical interventions and chronic diseases).

The reduction of prostaglandin protective effect on the gastric mucosa is the principal pathogenic mechanism.

Symptoms appears after 3-6 days prior to the causative event and it is mainly abdominal pain and hematemesis (sometimes). The major symptom in gastric ulcer is epigastric pain, shortly after meal. In duodenal ulcer a burning pain sets in 2-3 hours after meal. Alarm signs in the case of perforated gastric or duodenal ulcer with high digestive system hemorrhage are sharp and strong abdominal pain, “coffee ground” vomit and melena. Other alarm signs are anemia, dehydration, weight loss without, dysphagia, and family history of gastric cancer. Laboratory test: Serum pepsinogen A and C, gastrin 17 (G17), gastrin

34 (G34, large gastrin), anti-*Helicobacter pylori* antibody. Endoscopy is preferred in case of active bleeding for hemostasis and for the localization of the bleeding site and evaluation of the grade of the bleeding. 13C- urease breath test (UBT) has a high specificity and sensibility, it is to be trusted and none invasive for detecting *Helicobacter pylori*. Detecting anti *Helicobacter* antibody (IgG and IgA) in the blood, urine and saliva has no clinical significance. *Helicobacter pylori* culture has a low sensibility and 100% specificity. Urease breath test and stool test for detecting *Helicobacter pylori*, combined with endoscopy helps in diagnosis.

HP fecal antigen detection is a non-invasive test which can be reliable to determine the success of HP eradication. Fecal antigen detection technique may include monoclonal and polyclonal EIA, also immune-chromatographic tests. It is not age-dependent, but easier to perform on children. Anti-HP antibodies are resistant to degradation.

Differential diagnosis of peptic ulcer: acute cholangitis, acute coronary syndrome, acute gastritis, cholecystitis, cholecystitis and biliary colic in emergency medicine, chronic gastritis, diverticulitis, emergency treatment of gastroenteritis, esophageal rupture and tears in emergency medicine, esophagitis, gallstones (cholelithiasis), gastroesophageal reflux disease, inflammatory bowel disease, viral hepatitis, acute appendicitis and peritonitis, Crohn disease, Zollinger-Ellison syndrome.

If treatment is carried out in the right way the prognosis is excellent. Complications are 1-2% in children and the mortality rate is just 1 in 100.000 cases. Prevention is important and necessary and reduces the risk of gastric and duodenal ulcer. NSAIDs has to be stopped immediately. Stressful events has to be reduced in children with gastro-duodenal ulcer. Alcohol abuse in adolescence is a serious problem and has to be discouraged. Ulcer treatment has better results in boys than girls. *Helicobacter pylori* is a risk factor for gastric cancer, so the treatment is sine qua non. In order to deal with this pathology pediatric surgery departments has to be well equipped with the right instruments (CT scan, endoscopy, MRI, and laparoscopic surgery apparatus).

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Treatment: The first line of treatment has to abide by the guidelines of the European and the American Society of Pediatric Gastroenterology (the proton pump triple standard therapy, the bismuth based quadruple therapy and the sequential therapy) as mentioned below. *Helicobacter pylori* is treated with 3 different types of antibiotics combined with antiacids and gastric mucosa protection medications.

The following therapeutic guidelines were issued by the European and the American Society of Pediatric Gastroenterology as the first line of treatment:

1. Standard therapy with proton pump inhibitor-PPI (1-2mg/kg/day), Ampicillin –AMPC (50mg/kg/day), Clarithromycin –CAM (20mg/kg/day) and Metronidazole –MNZ (20mg/kg/day).
2. Quadruple therapy based on bismuth: Subsalicylate bismuth (8mg/kg/day) for 5 days. AMPC (50mg/kg/day), Clarithromycin-CAM (20mg/kg/day) and Metronidazole-MNZ (20mg/kg/day).
3. Sequential therapy: PPI (1-2mg/kg/day), AMPC (50mg/kg/day) for 5 days, CAM (20mg/kg/day), MNZ (20mg/kg/day), for 5 days.

Gastrointestinal endoscopy helps us to locate the bleeding site in case of hematemesis. This involves thermic cauterization (laser mono- or bipolar or argon coagulation) and none thermic (vasoconstriction and sclerosant injections). Agents used are epinephrine (1: 10.000), thrombin and fibrin reduces the need of surgical intervention and also the need of transfusion in the case of bleeding of non-perforated ulcer.

Laparoscopic surgery, omentoplasty and peritoneal lavage are the gold standard and the results are very good when properly done.

Transluminal endoscopic surgery is an alternative non-invasive intervention for selected patients. Delay in decision for surgical intervention is very crucial in the survival of perforated peptic ulcer patients. Initial biopsy, endoscopic follow up and repeated biopsies are essential not to omit a possible gastric ulcer malignancy.

Complication: Complications of peptic ulcer are: slow long term bleeding, leading to anemia, rapid and sever bleeding, blood vomiting, blood in the stool (pinkish or black stool) melena, peritonitis, gastric outlet obstruction

Case presentation

Patient B.A., age 17, admitted at the pediatric surgery department, in a serious condition. Patient was under the influence of alcohol (coming from a party), and with acute abdominal pain, nausea, bilious vomiting, fever, and very combative. On clinical examination the following was observed: dry cough, no passage of stool or wind, rales, dyspnea, tachycardia, palpitation, severe abdominal pain localized at the right abdominal quadrant (abdominal rigidity), no passage of stool or wind. Rectal examination: no sign of rectal bleeding (no stool). Abdominal x-ray: no pneumoperitoneum, no air-fluid levels. Lab tests: leukocyte 17.000/m, neutrophil 75.30%, CRP 49, blood sugar 132mg/dl. Other aspects were within normal limits. Abdominal CT and endoscopy was not considered necessary because of the absence of high digestive system (HDS)

bleeding. No family history of gastroduodenal ulcer. Patient was in a stable condition though serious and an emergency sub-umbilical laparotomy was performed because we suspected appendicular peritonitis, based on the right abdominal quadrant pain, the incision was later prolonged (supra-umbilical), upon discovery of bile in the abdominal cavity. On exploration we discovered a perforated small curvature of the stomach of about 3 cm diameter. We performed ulcer excision with single layer suture Starr and Judd procedure, pyloroplasty, omentoplasty, peritoneal lavage and drainage.



Photo 1. Abdominal ultrasound: moderate amount of fluid in the pelvis, other aspects were within normal limits



Photo 2. Ultrasound signs mimicking an acute appendicitis

Post-operation treatment: antisecretory drugs (Arnetin), antibiotics: (Ceftriaxone and Gentamicin), antiemetic (Metoclopramid), antalgics (Acupan, Metamizole), correction of fluid and electrolyte imbalance (Glucose 5% and NaCl 0.9%), antithrombotic drug (Clexane).

Postoperative status was good, no complication. Patients condition after 2 years was good and without complication.

Discussion

Gastric ulcer is known as an adult disease, it is very rare in children and mainly in adolescence (90.4%), especially in boys (80.7%). Gastric ulcer is classified according to its location and its relationship with duodenal ulcer:

Type 1: Located on the body of the stomach and generally characterized by its low gastric acid secretion, especially at night. This reflects gastric mucosa inflammation with reduced functional parietal cellular mass.

Type 2: located at the gastric antrum and characterized by low, normal or high acid secretion.

Type 3: situated 3 cm from the pylorus, sometimes associated with duodenal ulcer and characterized by high gastric acid secretion.

Type 4: situated at the gastric cardia and characterized by low acid secretion.

The farther the ulcer is to the pylorus, the lower the basal acid secretion.

Because of this concept distal gastric ulcer is managed by resection drainage and vagotomy, while proximal gastric ulcer is simply treated by just resection.

Forrest classification describes four types of peptic ulcer based on endoscopic characteristics and associated upper gastrointestinal bleeding:

Forrest 1a: spurting arterial bleeding;

Forrest 1b: oozing arterial bleeding;

Forrest 2a: non hemorrhagic dilated large vessels;

Forrest 2b: adherent clot;

Forrest 2c: the presence of hematin at the ulcer base;

Forrest 3: lesion with sign of recent bleeding.

Perforated gastric ulcer is difficult to diagnose in children with acute abdomen (abdominal pain and peritoneal irritation). In children we always have the tendency of thinking about acute appendicitis or peritonitis especially in

the absence of epigastric pain. X-ray helps us with diagnosis in 82.7% cases of anterior bulboduodenal perforation. About 90% of adolescence with ulcer have no history of ulcer. Pneumoscrotum is a rare condition described as the presence of gas in the scrotum, often associated with pneumoperitoneum in smaller children. Pneumoscrotum may be a sign of recurrent peptic ulcer after laparoscopic surgery. Contrary to duodenal ulcers, patients with gastric ulcer have normal or low basal or stimulated acid production. This suggests that altered gastric acid defense is the cause and this explains why NSAIDs induces gastric ulcer (Schubert and Peura).

Diagnosis can be determined by rapid urease test and stool test to detect *Helicobacter pylori* combined with gastrointestinal endoscopy. *Helicobacter pylori* culture has a low sensitivity and 100% specificity (Schubert).

Delay of surgery in perforated ulcer favors complication and mortality in some cases. Antisecretory drug treatment (proton pump inhibitors), reduces the necessity of vagotomy practiced in the past. Eradication of *Helicobacter pylori* infection reduces recurrence. New drugs in this field has really helped in reducing mortality and morbidity.

Laparoscopic surgery remains the gold standard in the treatment of perforated ulcers, exception being critical patients or patients that has undergone past abdominal surgery.

The role played by *Helicobacter pylori* has to be further investigated and the issue still remains open.

Conclusions

1. Early presentation of patients at the doctor and change of life style reduces morbidity and mortality of patients with perforated peptic ulcer.

2. Urease breath test (UBS) is essential for detecting *Helicobacter pylori*.

3. Some studies suggest a strict selection of patients for conservative treatment. On a short term the result of this method of treatment can be compared with gastrectomy. The long term result of patients that benefited from conservative cannot be estimated.

4. Alcohol consumption and surgical resection are of statistical importance for postoperation prognosis, morbidity and mortality.

5. Decision to operate should be without delay.

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