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Life-Threatening NSAIDs-Induced Erosive Gastritis: Minimally Invasive Endovascular Haemorrhage Control

Gastrite Erosiva Grave Induzida por AINES: Tratamento Endovascular Minimamente Invasivo

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Abstract

Non-steroidal anti-inflammatory drugs (NSAIDs) are one of the most used drugs worldwide and can cause potentially serious gastrointestinal complications, even when used in the short-term. They are currently the main cause of peptic ulcer disease, which is responsible for the majority of upper gastrointestinal bleeding. After resuscitation measures and hemodynamical stabilization, upper gastrointestinal endoscopy is the preferred method to confirm the diagnosis and treat the haemorrhage. Endovascular embolization is frequently chosen as a second line therapy. The present work describes a case of acute haemorrhagic erosive gastritis in a young patient after high doses of NSAIDs, manifested by episodes of hematemesis and haemorrhagic shock, treated with endovascular arterial embolization with favourable outcome.

Key-words

Gastrointestinal haemorrhage; NSAIDs; Therapeutic embolization.

Resumo

Os anti-inflamatórios não esteróides (AINEs) são dos fármacos mais usados a nível mundial e podem provocar efeitos adversos gastrointestinais potencialmente graves, mesmo quando usados a curto prazo. São atualmente a principal causa de doença ulcerosa péptica, que é responsável pela maioria das hemorragias digestivas altas. Após medidas gerais de suporte e estabilização hemodinâmica, a endoscopia digestiva alta é o método de eleição para confirmar o diagnóstico e tratar a hemorragia. Como segunda linha recorre-se frequentemente a embolização endovascular. O presente trabalho retrata um caso de gastrite erosiva hemorrágica aguda em jovem após toma de AINEs em doses excessivas, manifestada por quadro de hematémeses e choque hemorrágico, submetida a embolização arterial endovascular terapêutica com resultado favorável.

Palavras-chave

Hemorragia gastrointestinal; AINEs; Embolização terapêutica.

Introduction

Non-steroidal anti-inflammatory drugs (NSAIDs) are widely used worldwide for their inhibitory effect on cyclooxygenase (COX) enzymes, reducing prostaglandins that mediate inflammation, pain and fever. However, they are associated with adverse gastrointestinal effects, mainly due to the role of prostaglandins in the protection of the gastric mucosa (mediated by the COX1 isoenzyme). COX2-selective NSAIDs (responsible for anti-inflammatory effects) have a lower risk of these complications, but are associated with cardiovascular complications.[1,2] Gastrointestinal lesions can be premature (hours to days), depend on the dose and on the pharmacological potency, and clinical severity is variable, from dyspepsia to potentially fatal gastrointestinal bleeding.[3,4]

The initial approach to upper gastrointestinal haemorrhage (UGIH) involves general supportive measures and hemodynamic correction followed by upper gastrointestinal endoscopy (UGIE), which, in addition to being diagnostic, can treat haemorrhage. When this persists (5-10%) there is a need for surgery or endovascular embolization. The surgical mortality rate reaches 20-40%, particularly in hemodynamically unstable patients or those with comorbidities, where endovascular embolization may be a safer and less invasive alternative with high success, although it only detects bleeding at a rate greater than 0.5 ml/min.[5]

The present paper aims to describe a case of acute haemorrhagic erosive gastritis in a young woman after taking excessive doses of NSAIDs and to review their potential adverse effects and respective therapeutic and preventive approaches.

Case description

A 21-year-old female patient went to the Emergency Department (ED) for hematemesis with one day of evolution. She reported a febrile syndrome refractory to antipyretics, episodes of food vomiting and epigastric abdominal pain with a week of evolution, which led to two previous visits to the ED at another hospital, where she was medicated with magnesium metamizole and desloratadine. On her own initiative she additionally took Ibuprofen. She denied other complaints, relevant personal or family history, allergies, alcohol habits, or habitual medication.

Upon physical examination, she had an ear temperature of 38.8ºC and pain on abdominal palpation. Analytically, there was a reduction in the value of haemoglobin (10.4 g/dL), decreasing when compared to the previous days. In the ED,

she presented several episodes of hematemesis and started on Ondasetron and Pantoprazole.
The UGIE revealed small gastric erosions predominantly in the antrum. During surveillance, the objective was to progressively reduce haemoglobin levels (minimum 5.1 mg/dL) and hematemesis. The UGIE was repeated, identifying a large fresh clot in the greater curvature, which could not be removed. She was then submitted to angiography with selective catheterization of the celiac trunk and superselective catheterization of the gastroduodenal and accessory left gastric arteries (origin in the spleen), noticing an area of contrast retention in the greater gastric curvature (Fig. 1). Embolization of distal arterial branches was performed with polyvinyl alcohol particles and microcoils (Fig. 2). The main diagnostic hypothesis put forward was erosive gastropathy secondary to excessive intake of NSAIDs, complicated by haemorrhage and haemorrhagic shock.
During the hospital stay, she received multiple blood products, with an increase in the haemoglobin value. Control UDE on day 2 of admission revealed two white-bottomed ulcers on the greater curvature and gastric anterior wall. She remained hemodynamically stable and asymptomatic and was transferred to the hospital in her area of residence on the 5th day after admission.

Figure 1 – Superselective digital subtraction angiogram of the right gastroepiploic artery, showing an area of contrast retention in the gastric greater curvature zone (*), submitted to embolization. Arrow – end of the microcatheter in the right gastroepiploic artery. GEac - accessory left gastric artery

Discussion

NSAIDs can produce serious gastrointestinal complications, even when used on a short-term basis, with evident lesions within several hours.[3,4] The risk seems to be higher in the first month (presumably due to the subsequent adaptation of the mucosa), with higher doses and the combination of several NSAIDs.[4] The patient in this case developed severe haemorrhagic gastritis after only one week of taking them. She admitted to having exceeded the recommended dose and in addition to the NSAID prescribed by the doctor, she also took Ibuprofen, sold without a prescription. Although considered relatively safe, Ibuprofen is responsible for an increasing number of intoxications, possibly due to its easy and cheap access.[3,6]
Selective COX2 inhibitors, developed to reduce gastrointestinal effects, have been associated with cardiovascular complications, so they may not be a safe alternative in many patients. A better alternative involves preventive therapeutic measures, namely the concomitant use of proton pump inhibitor drugs (PPIs), H2 histamine antagonists or misoprostol (a Prostaglandin E2 analogue).[7]
The UGIH has an estimated mortality of 10%. The vast majority are caused by peptic ulcer disease, the main etiology of which is currently the use of NSAIDs.[8] The UGIE is the method of choice to confirm the diagnosis and treat haemorrhage, with an efficacy of over 90%. With advances in transarterial embolization techniques, it currently supplants surgery as a 2nd-line treatment, being less invasive and with fewer complications.[8,9]
Gastroduodenal irrigation (Fig. 3A) is rich and abundant, which, although it can make embolization difficult, reduces the incidence of ischemia. The probability of successful embolization will depend on prior knowledge of the bleeding site.[10] Many patients will have anatomic arterial variants. In the present case, an accessory left gastric artery was identified, responsible for collateral irrigation to the haemorrhage area (Fig. 3B).

Although there is no consensus based on evidence regarding the best embolization agent to be used in each case, the literature suggests that coils should be used with a gelatin sponge, particles or glue.[10] In the case described, the use of PVA particles and microcoils revealed effective and free of complications, illustrating the successful and safe therapeutic potential of this approach.

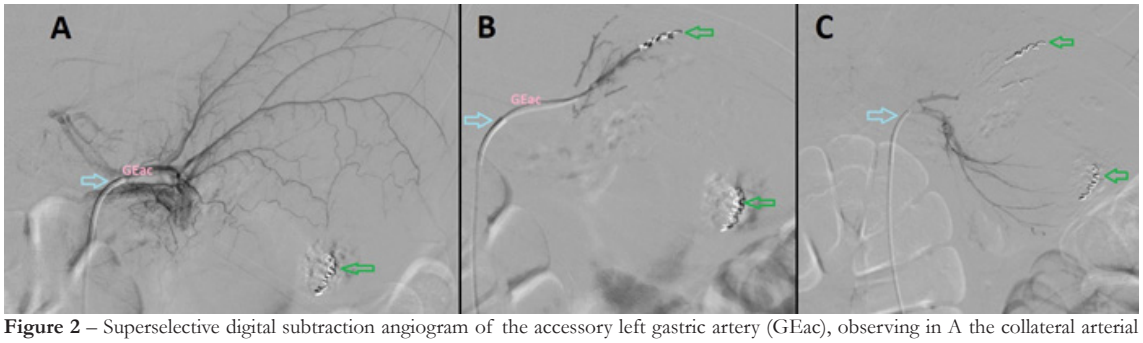

Figure 2 – Superselective digital subtraction angiogram of the accessory left gastric artery (GEac), observing in A the collateral arterial irrigation to the region of previous haemorrhage by small distal branches, so it was decided to also embolize this territory, after which, this irrigation ceased to be visible (B). After a slight retraction of the catheter (C), there is an absence of foci of extravasation of contrasts and of sources of collateral arterial irrigation in the embolized areas, resulting in a successful embolization. Blue arrows – tip of the catheter in the GEac; green arrows – embolization microcoils.

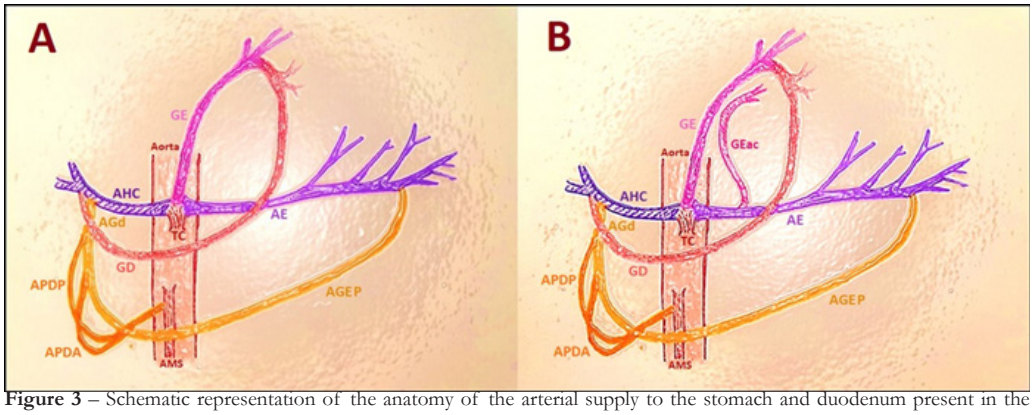

Figure 3 – Schematic representation of the anatomy of the arterial supply to the stomach and duodenum present in the majority of the population (A) and of the anatomical variant of the patient in the present clinical case (B). AE – splenic artery; AGd – gastroduodenal artery; AGEP – gastroepiploic artery; AHC – common hepatic artery; AMS – superior mesenteric artery; APDA – anterior pancreaticoduodenal arcade; APDP – posterior pancreaticoduodenal arcade; GD – right gastric artery; GE – left gastric artery; GEac - accessory left gastric artery; TC – celiac trunk. Adapted from 10.

Despite the low cost of PPIs, there is no consensus on whether prophylaxis of gastrointestinal complications will be cost-effective.[6,7] However, in addition to significant economic costs, more importantly, serious complications bring morbidity and potential mortality. In the existence of preventive strategies, their application should not be withheld due to the associated financial cost, and the mere awareness of the population about the risks of excessive use of NSAIDs can be an excellent form of inexpensive prevention.

The lack of awareness of the risks of excessive NSAIDs intake, added to their easy access, can have harmful consequences, namely gastrointestinal problems. The present clinical case of haemorrhagic shock due to acute haemorrhagic gastritis illustrates a serious complication of such behaviour. It is essential to alert patients to the potential harmful effects of excessive intake of this pharmacological class, even in the short term.

Ethical disclosures / Divulgações Éticas

Conflicts of interest: The authors have no conflicts of interest to declare.
Conflitos de interesse: Os autores declaram não possuir conflitos de interesse.
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Suporte financeiro: O presente trabalho não foi suportado por nenhum subsídio ou bolsa.
Confidentiality of data: The authors declare that they have followed the protocols of their work center on the publication of data from patients.
Confidencialidade dos dados: Os autores declaram ter seguido os protocolos do seu centro de trabalho acerca da publicação dos dados de doentes.
Protection of human and animal subjects: The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).
Protecção de pessoas e animais: Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia da Associação Médica Mundial.

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