CONSENSUS STATEMENT

Formación acreditada

Clinical practice guidelines for managing nonvariceal upper gastrointestinal bleeding

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Nonvariceal upper gastrointestinal (GI) bleeding is a common medical emergency associated with appreciable morbidity and mortality. The significant advances made in managing this condition in recent years have reduced the rates of rebleeding and mortality. These clinical guidelines for managing this emergency are intended to be highly practical, evidence-based, and take recent consensus statements into account. The 3 keys to managing nonvariceal upper GI bleeding are a) early restoration of fluids and blood pressure and the prevention of underlying cardiovascular disease, which is common in these patients; b) endoscopy to treat lesions at high risk of rebleeding; and c) medical therapy with high doses of proton pump inhibitors before and after endoscopy. These 3 measures, used in combination, reduce upper GI rebleeding and mortality rates. [Emergencias 2013;25:472-481]

Keywords: Nonvariceal upper gastrointestinal bleeding. Gastroscopy. Endoscopy. Coagulation. Proton pump inhibitors. Recurrence. *Helicobacter pylori.* Nonsteroidal antiinflammatory drugs (NSAIDs). Acetylsalicylic acid (ASA). Clopidogrel. Gastric ulcer.

Of all cases of upper gastrointestinal bleeding, 80-90% are non-variceal, and of these, the most frequent cause is peptic ulcer[1]. Non-variceal upper gastrointestinal bleeding (NVUGB) is one of the most common reasons for hospitalization of digestive system patients[1]. It represents a major economic and health care burden[2,3]. In Spain, in the year 2000, the annual incidence of gastrointestinal bleeding from peptic ulcer was 80 episodes per 100,000 inhabitants[4], with a mortality rate around 5.5%[5]. The estimated cost per episode is between 2,000 and 3,000 euros[6].

In recent years there have been significant advances in the management of NVUGB with decreased recurrence and mortality[7]. Recently, an international consensus[3] and another national consensus[1] have updated recommendations on the management of NVUGB according the latest scientific evidence. The strategy for disseminating the consensus recommendations includes the publication of eminently practical guidelines by the participating societies[1-3].

The aim of this document is to offer a guide to clinical management of NVUGB based on scientific evidence and the recommendations of the recent consensus. This document summarizes the recommendations of the Spanish consensus on the management of gastrointestinal bleeding from peptic ulcer[1] (Table 1). These recommendations have been generalized to NVUGB, and are presented in a chronological and clinically ordered manner for application in clinical practice. The degree of evidence supporting each recommendation according to the GRADE classification (Table 2) is also included.

Initial measures

Cardiovascular complications are the leading cause of death in upper GI bleeding[1,8]. For this reason, initial resuscitation should precede any diagnostic measure2 [degree of recommendation (DR): strong; quality of evidence (QE): moderate]. The measures to be carried out immediately after admission are summarized in Table 3 and in the algorithm shown in Figure 1.

Initial assessment

Initial medical case history should include a) form of presentation of the bleeding - vomiting "coffee grounds" or hematemesis, associated or not to melena; (b) signs of severity and hemodynamic repercussion, massive hematemesis, cold sweat, loss of consciousness (syncope or fainting); (c) co-morbidity, taking into account especially the history or clinical data indicative of liver disease (patients with esophageal-gastric variceal UGB require different management) and a history of cardiovascular disease[9]; and (d) the use of antiplatelet, anticoagulant, or new oral anticoagulants (dabigatran, rivaroxaban, apixaban, etc.)[9].

Initial physical examination should a) confirm the hemorrhage by rectal examination. Nasogastric probe (NGP) rarely modifies the management and is very uncomfortable for the patient, so should be used sparingly and only for diagnostic confirmation[2,3] (DR: weak, QE: low), withdrawing it after evaluating the appearance of the gastric aspirate. gastric lavage through NGP is not recommended[1] (DR: weak, QE: low); (b) evaluate the hemodynamic status [systolic blood pressure (SBP) and heart rate (HR), as well as signs of peripheral hypoperfusion,]; in addition, the severity of the bleeding is based on these data (Table 4), oxygen saturation and level of consciousness are also useful in the initial evaluation of the patient with UGB, and (c) rule out liver cirrhosis (rating stigmata of chronic liver disease and the presence of ascites or encephalopathy)[9].

After this evaluation and initial hemodynamic stabilization, the recommendation is to complete the case history and physical examination. In stable patients, the Glasgow-Blatchford classification (Table 5), can be used to detect candidates for outpatient management (see prognostic classification)[2].

Resuscitation and stabilization measures Hemodynamics

Early correction of hypotension is the most effective initial measure to significantly reduce mortality associated with UGB1 (QE: moderate, DR: strong).

Initial management and hemodynamic stabilization

1. Place 2 thick peripheral lines for rapid crystalloid infusion (replacement of blood volume) or blood products if necessary.
2. Solicit blood tests (hemogram, coagulation, renal function and ionogram, and liver function tests).
3. Ensure a reserve of blood (at least 2 bags of packed red blood cells).
4. Replace the volume with crystalloids. There is no evidence that colloids are superior to saline, so the latter is recommended[10].
5 Indicate absolute diet.

Table 1. Consensus recommendations

SECTION A. Initial management

- Recommendation A1: adequate management of GI bleeding requires immediate clinical evaluation and early initiation of appropriate resuscitation.
- Recommendation A2: use of prognostic scales as an instrument of support for early stratification as low or high risk of bleeding recurrence and death.
- Recommendation A3: placement of an NGP should be limited to patients with UGB where the findings may have diagnostic or prognostic value.
- Recommendation A4: patients with UGB and hemoglobin values < 7 g/dL should undergo blood transfusion. The threshold should be higher in patients with active bleeding, serious underlying heart or respiratory disease.
- Recommendation A5: correct coagulation disorders in patients treated with anticoagulants and acute hemorrhage. Treatment, however, should not delay urgent endoscopy.
- Recommendation A6: prokinetic agents administered before endoscopy are not systematically indicated. They can be useful in selected patients to increase the diagnostic performance of emergency endoscopy.
- Recommendation A7: low-risk patients, identified by clinical and endoscopic criteria, can be discharged after the endoscopy.
- Recommendation A8: consider treatment with PPI before endoscopy to reduce the frequency of high-risk endoscopic stigmata and, therefore, the need for endoscopic therapy, but should not delay the indication of early endoscopy.

SECTION B. Endoscopic treatment

- Recommendation B1: the implementation of specific protocols for multidisciplinary management of gastrointestinal bleeding due to peptic ulcer. Protocols should include the availability of urgent endoscopy and a physician trained in endoscopic hemostasis techniques.
- Recommendation B2: trained nursing staff is necessary to assist in the urgent endoscopy.
- Recommendation B3: early endoscopy should be performed within 24 hours of admission in patients with UGB.
- Recommendation B4: Hemostatic treatment is not indicated in patients with low-risk endoscopic lesions (clean ulcer or flat hematin stain).
- Recommendation B5: when a clot is adhered to the ulcer, wash to release it and, if necessary, endoscopically treat the underlying lesion.
- Recommendation B6: if washing fails, endoscopic treatment is safe and may reduce the rate of bleeding recurrence. However, there is no definitive evidence that this treatment is superior to treatment with high-dose PPI alone.
- Recommendation B7: endoscopic treatment is indicated for patients with active bleeding, ulcer and non-bleeding visible vessel.
- Recommendation B8: adrenaline injection as monotherapy does not achieve optimal results; for this reason, it must be associated with a second endoscopic hemostatic method (clips, thermocoagulation or sclerosant injection).
- Recommendation B9: clips and thermocoagulation can be used alone or in combination with adrenaline injection.
- Recommendation B10: systematic second-look endoscopic examination to review the results is not recommended.
- Recommendation B11: generally, in case of bleeding recurrence, a second attempt at endoscopic treatment is recommended.

SECTION C. Medical treatment

- Recommendation C1: H2 receptor antagonists are not recommended in patients with upper GI bleeding.
- Recommendation C2: octreotide or somatostatin should not be administered routinely in UGB due to peptic ulcer.
- Recommendation C3: in patients with high-risk endoscopic stigmata, endoscopic therapy should be associated with the initial administration of a bolus of PPI and continuous intravenous infusion in order to reduce the risk of bleeding recurrence and mortality.
- Recommendation C4: after an episode of UGB, patients should be discharged with oral PPI treatment

SECTION D. Management after endoscopy

- Recommendation D1: in patients with low-risk lesions, normal feeding can be started after the endoscopy.
- Recommendation D2: after endoscopic therapy, patients should be hospitalized for at least 72 hours.
- Recommendation D3: when initial endoscopic treatment fails, the patient must be given an early appointment with the surgeon.
- Recommendation D4: when initial endoscopic treatment fails, percutaneous arterial embolization performed by expert staff seems safe and can be effective to control the bleeding.
- Recommendation D5: infection by H. pylori in patients with bleeding peptic ulcer must be investigated and treated. Confirm eradication.
- Recommendation D6: *H. pylori* tests have a very high rate of false negative results when performed during the bleeding episode. These tests should be repeated whenever the initial results are negative.

SECTION E. NSAIDs and ASA

- Recommendation E1: in previous gastrointestinal bleeding from peptic ulcer patients requiring NSAIDs, traditional NSAID plus PPI treatment or selective Cox-2 inhibitor monotherapy are associated with a high residual risk of hemorrhagic recurrence.
- Recommendation E2: in order to minimize the possibility of hemorrhagic recurrence, patients with a history of GI bleeding from peptic ulcer who require an NSAID should be treated with the combination of a selective COX-2 inhibitor plus PPI.
- Recommendation E3: in patients treated with low-dose ASA that develop acute GI bleeding from peptic ulcer, ASA must be reinstated early, as soon as it is considered that the risk of a vascular accident outweighs the risk of hemorrhage.
- Recommendation E4: patients with previous GI bleeding from peptic ulcer treated with clopidogrel as preventive cardiovascular therapy are at greater risk of bleeding recurrence than those receiving the combination of ASA and PPI.

GI: gastrointestinal; NGP: nasogastric probe; PPI: proton pump inhibitors; NSAIDs: non-steroidal anti-inflammatory drugs; ASA: acetylsalicylic acid.

Table 2. GRADE Classification

Evidence	Study design	Decreases if*	Increases if*
High	RCT	Important limitation of study quality (–1) or very important (–2)	Strong association**, without confounding factors, consistent and direct (+ 1)
Moderate		Important inconsistency (–1)	Very strong association***, without important threats to the validity (no bias) and direct evidence direct (+ 2)
Low	Observational study	Some (–1) or large (–2) uncertainty about whether the evidence is direct.	Dose gradient response (+ 1)
Very low		Insufficient or inaccurate data (–1)	All possible confounders factors could have reduced the observed effect (+ 1)
		High probability of notification bias (–1)	
Recommendation	**Patients**	**Clinical**	**Managers/planners**
Strong	The vast majority of experts agree with the recommended action versus a minority who do not.	The majority of patients should receive the recommended intervention.	The recommendation can be adopted as health policy in most situations.
Weak	Most people agree with the recommended action but a significant number do not.	Different options will be appropriate for different patients and the health que el profesional sanitario tiene que professional must help each patient to decide according to their values and preferences.	There is need for debate with the participation of interest groups.

*1: up or down a level (e.g., high to moderate); 2: up or down two levels (e.g., high to low). *A statistically significant relative risk of > 2 (< 0.5), based on evidence consisting of two or more observational studies, no plausible confusion factors. *A statistically significant relative risk of > 5 (< 0.2), based on direct evidence and no significant threats to validity. RCT: randomized clinical trial.

Transfusion criteria

1. In patients with evidence of massive hemorrhage and shock, hematocrit does not reflect the extent of blood loss. In these patients, the recommendation is to jointly administer packed red blood cells and crystalloid to stabilize the patient.

2. In stable patients without cardiovascular disease or active bleeding, with hemoglobin (Hb) equal or less than 7 g/dL, transfusion is recommended to keep Hb values between 7-9 g/dL. However, in young hemodynamically stable patients without underlying disease, and no evidence of active bleeding, values < 7 may not require transfusion as long as the anemia is well-tolerated[2,3].

3. In patients with cardiovascular disease or ac-

Table 3. Measures initials in non-variceal upper gastrointestinal bleeding (NVUGB)[9]

Initial actions	Anamnesis, confirm NVUGB and hemodynamic evaluation. Stratify risk of the UGB (scales). Place 2 thick peripheral lines. Reserve red blood cell concentrates. Lab tests with coagulation test. Rectal exam/NGP if necessary. Blood volume replacement. Absolute diet. Oxygen saturation. Level of consciousness to assess OTI.
Transfusion	Hb ≤ 7 g/dL, without cardiovascular disease (maintain Hb 7-9 g/L). HB ≤ 10 g/dL and cardiovascular disease (maintain HB ≤ 10 g/dL).
Correct coagulation disorders	Supratherapeutic INR: correction. INR in the therapeutic range: there is no evidence; individualize, but gastroscopy should not be delayed. *No active bleeding: vitamin K iv (2 vials). *Active bleeding: vitamin K and fresh frozen plasma (10 ml/kg) or prothrombin factor concentrate. Dabigatran and rivaroxaban. Suspend treatment and replace with low molecular weight heparin. In severe hemorrhage, consider rating infusion of prothrombin factor concentrate.

NGP: nasogastric; OTI: orotracheal intubation.

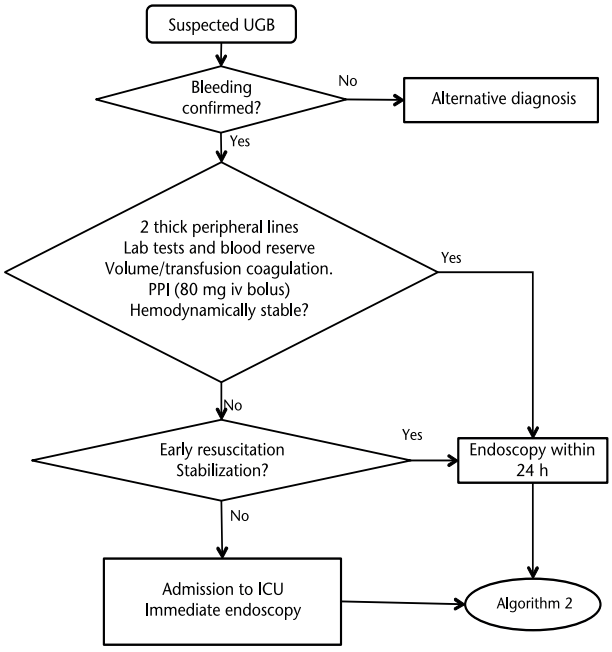

Figure 1. Algorithm 1: initial treatment of upper gastrointestinal bleeding (UGB); PPI: Proton pump inhibitors; ICU: intensive care unit.

Table 4. Hemodynamic evaluation of severity of upper gastrointestinal bleeding

Severity	Hemodynamic status
Mild	SBP > 100 mmHg and HR < 100 beats/min
Serious	SBP < 100 mmHg and/or HR > 100 beats/min Signs of peripheral hypoperfusion

SBP: Systolic blood pressure; HR: heart rate.

tive bleeding with Hb ≤10 g/dL, transfusion is required to achieve Hb values >10 g/dL3 (DR: weak, QE: low).

Correction of coagulation disorders

The recommendation is to correct coagulation disorders in patients with acute bleeding and treated with anticoagulants1 (DR: strong, QE: low).

Recommendations for dicoumarol use are:

1 INR with supratherapeutic levels: coagulation should be corrected to achieve therapeutic levels even before interventions such as endoscopy[1,3]. The correction should take place urgently with fresh frozen plasma (10 ml/kg) or prothrombin drugs in the case of active bleeding and hemodynamic instability. Otherwise, if the bleeding is not active, vitamin K can be given (2 vials iv. single dose).

2 INR in therapeutic range: there is no evidence on the usefulness of correcting anticoagulation. Differences in the rate of bleeding recurrence, surgery, or mortality in these patients have not been demonstrated compared with maintaining adequate anticoagulation. In these cases, the risk-benefit of suspending anticoagulation should be individually assessed. In any case, gastroscopy should not be delayed in the acute phase if the INR is within the therapeutic range[1,3]. The risk-benefit of maintaining anticoagulation should be assessed in all patients. As a general measure, one should reverse anticoagulation with a dicoumarol drug and maintain full dose low molecular weight heparin (LMWH) during the acute phase of hemorrhage.

Recommendations for new anticoagulants (dabigatran, rivaroxaban, apixaban etc) are as follows[11-13]:

1. At present there is no specific antidote to counteract the effect of the new anticoagulants.

2. Suspend the drug and prioritize hemodynamic stabilization measures mentioned above. Fresh frozen plasma, prothrombin complex concentrates and recombinant factor VIIa can be considered[14]. There are some experimental and clinical data supporting the effectiveness of these blood products to reverse the effects of the new anticoagulants.

3. Some of the new anticoagulants, such as dabigatran, are eliminated through the kidneys, so it is important to maintain adequate urine output. In cases of severe uncontrolled bleeding, especially in patients with renal failure, hemodialysis may be effective.

Table 5. Blatchford scale

Variable	Risk marker at admission	Puntuación
Serum urea mmol/L	≥ 6.5 -7.9	2
	8-9.9	3
	10-24.9	4
	≥ 25	6
Hemoglobin g/dl (male)	≥ 12-13	1
	10-11.9	3
	< 10	6
Hemoglobin g/dl (women)	≥ 10-12	1
	< 10	6
Systolic blood pressure (mmHg)	100-109	1
	90-99	2
	< 90	3
Other markers	Pulso ≥ 100	1
	Presentación con melena	1
	Presentación con síncope	2
	Enfermedad hepática	2
	Insuficiencia cardiaca	2

The cut-off point for low-risk patients has been located between 0 and 3 points, according to the study.

Pre-endoscopic drug treatment

Regarding the use of prokinetic agents (metoclopramide / erythromycin iv):

1. They must not be indicated systematically before gastroscopy[1,2].

2. Intravenous erythromycin could be useful in selected patients - those with massive hemorrhage and aspirated blood - to increase the diagnostic performance of emergency gastroscopy. The clearest indication is before a second endoscopy in those patients where blood in the stomach prevented adequate visualization of the bleeding lesion[1,2] (DR: weak, QE: moderate).

Regarding the use of intravenous proton pump inhibitors (PPI) such as omeprazole, pantoprazole, esomeprazole etc:

1. Intravenous administration before gastroscopy decreases active bleeding, the need for endoscopic treatment and mean hospital stay[1] (DR: strong, QE: moderate).

2. PPI administration should not delay the gastroscopy1 (DR: strong, QE: moderate).

3 It is especially important to administer intravenous PPI if endoscopy is not expected to be performed immediately[2].

4. The initial dose is not clear, given the lack of randomized studies. The recommended dose is a bolus of 80 mg of endovenous PPI.

5. An intravenous bolus of 80 mg PPI should be followed by 8 mg/h dissolved in normal saline perfusion (precipitates in glycated saline solution). Replace the infusion every 12 hours due to the low stability of the molecule in solution. The only randomized study used esomeprazole, so it is unknown whether other PPIs are equally effective[2,15].

Endoscopic treatment

Endoscopy allows stratifying the risk of hemorrhage from the endoscopic viewpoint and initiating treatment of the bleeding lesion, thus reducing the risk of recurrence, the need for surgery and mortality[16,17]. Emergency gastroscopy within 24 hours of admission[1,2] is strongly recommended (DR: strong, QE: moderate).

When to perform endoscopy in NVUGB

From the clinical point of view, if the patient is hemodynamically unstable (Table 4), suggesting that bleeding is severe, gastroscopy should be performed within 4-6 h[1,2], but always after stabilization. The usefulness of early endoscopy is not proven[18], but seems reasonable and we recommend it on the basis of expert opinion. If there is hemodynamic instability, massive hematemesis or if abundant fresh blood is aspirated by NGP[1,2], then bleeding is considered severe.

Situations in which endoscopy may have to be delayed

The risk/benefit must be carefully evaluated and gastroscopy should usually be deferred if there is suspected perforation, recent gastrointestinal surgery or acute coronary syndrome acute[2]. Gastroscopy in hemodynamically unstable patients or with supratherapeutic anticoagulation levels entails a high risk of morbidity and mortality and should be deferred until the patient is hemodynamically stable. Endoscopy in unstable patients should be considered a desperate measure. It should only be done under the supervision of an anesthesiologist or intensive care specialist and with intensive reanimation and surveillance measures.

Endoscopic recurrence risk stratification Hemorrhagic

Endoscopy allows stratifying the risk of bleeding recurrence according to high-risk endoscopic stigmata (Forrest classification, Table 6)[9-19]. Patients with high-risk stigmata - active bleeding, non-bleeding visible vessel and clot adhered to the lesion (Forrest Ia and Ib, IIa and IIb, respectively) -, require endoscopic treatment[2] (DR: strong, QE: high). This reduces the rate of recurrence, the need for surgery and mortality. Hemostatic treatment is not indicated in patients with low-risk endoscopic lesions[1] (DR: strong, QE: high).

Table 6. Forrest classification[9]

Classification	Endoscopic finding
Active bleeding	
Ia	Hemorrhage Jet
Ib	Hemorrhage in drooling
Recent hemorrhage	
IIa	Non-bleeding visible vessel
IIb	Clot attached
IIc	Hematin
No signs of bleeding	
III	Fibrin base

Endoscopic treatment

Endoscopic treatment should be combined (DR: strong, QE: high) and use adrenaline injection associated with a second hemostatic technique (injection of alcohol or polidocanol, thermocoagulation, or placement of a metal clip)[17]. This second endoscopic treatment must be selected based on resource availability and experience of each endoscopist[2]. The use of clips in an isolated manner might also be an acceptable option.

When a clot is attached to the lesion (Forrest IIb), try to mobilize the clot with irrigation using water and endoscopic treatment of the underlying stigma[1] (DR: strong, QE: moderate). If that fails, the need for endoscopic treatment is controversial. However, most experts participating in the consensus supported endoscopic treatment in this case (DR: strong, QE: moderate).

A control gastroscopy or second look is not routinely needed after endoscopic treatment[1] (DR: weak, QE: moderate). It is only recommended in cases of where there are reasons to doubt the efficacy of endoscopic treatment or those with high risk of recurrence in the opinion of the attending physician. Factors that increase the risk of recurrence in patients who have received endoscopic treatment are: presentation with shock, low Hb requiring transfusion, active bleeding at endoscopy, bleeding ulcers greater than 2 cm in diameter and ulcer location at the lesser curvature of the stomach or upper or posterior duodenum[2,20].

Prognostic stratification

By consensus, the use of prognostic scales is recommended to stratify patients into high and low risk of recurrence and mortality[2] (DR: weak, QE: moderate). However, there is no evidence that the prognostic scales available are better than the clinical judgment of the physician to predict recurrence and mortality[1].

The Glasgow-Blatchford scale (Table 5) can be used before gastroscopy. A score of 0 (patient without any sign of seriousness or melena) suggests that the patient can safely be discharged from hospital and given an appointment for outpatient gastroscopy within 24-48 hours[2,21]. Other scores indicate the need for early gastroscopy.

During the gastroscopy, the presence of stigmata of high risk according to the classification of Forrest predicts effectively the risk of bleeding recurrence and the need for endoscopic treatment[19].

After gastroscopy, the Rockall index[22] is most often used to evaluate the risk of recurrence and mortality[2] (Table 7).

Table 7. Rockall index

Variable	Score
Age (years)	
< 60	0
60-79	1
> 80	2
Circulatory status	
No shock (SBP > 100 mmHg and HR < 100 beats/min)	0
Tachycardia (SBP > 100 mmHg and HR > 100 beats/min)	1
Hypotension (SBP < 100 mmHg)	2
Associated diseases	
No disease	0
Ischemic heart disease, chronic heart failure, others	2
Chronic renal failure, cirrhosis, neoplasia	3
Diagnosis	
Mallory-Weiss, no lesions, no signs of RB	0
All other diagnoses	1
Neoplasia	2
Signs of RB	
No stigmas, hematin	0
Fresh blood in stomach, active UGB, NBVVN, clot	2

Low risk < 2 points*; Intermediate risk 3-4 points; high risk ≥ 5 points. *intermediate risk for patients with no lesion detected at NGP and, in addition, there is fresh blood in the stomach or hematocrit < 30% or hypotension. RB: recent bleeding; UGB: upper gastrointestinal bleeding. SBP: systolic blood pressure. HR: heart rate. NBVV: non-bleeding visible vessel.

Drug treatment and management after gastroscopy

Management after endoscopy is summarized in Figure 2. PPIs are the treatment of choice. Patients with endoscopic high-risk stigmata (Forrest Ia, Ib, IIa and IIb) should receive a bolus of 80 mg PPI - preferably esomeprazole - followed by continuous intravenous infusion (see previous paragraphs) for 72 hours[1,2] (DR: strong, QE: high) if they have not already received it. They should fast for 24 hours beforehand. After 72 hours they can be discharged with oral PPI every 24 hours (DR: strong, QE: moderate). They should be referred for outpatient assessment of possible infection by H. pylori and treatment if necessary. Patients with low-risk endoscopic stigmata (Forrest III and IIc), can restart oral feeding immediately (DR: strong, QE: high) and take daily oral PPI (DR: strong, QE: moderate); they can be considered for early ED discharge taking into account the general state, comorbidity, and personal situation[1,2] (DR: strong, QE: high). They too should be referred for outpatient assessment of possible infection by H. pylori and treatment if necessary.

Management of relapse

In the event of recurrence, a second gastroscopy and repeat endoscopic treatment is indicated1 (DR: strong, QE: moderate). A second endoscopic treatment is as effective as surgery and is associated with lower mortality[23] and, consequently, reduces the need for surgery and the number of complications[2,3].

If this fails or is not practicable, angiography with selective embolization is equally effective and has fewer adverse effects than surgery (DR: weak, QE: low). It is especially indicated in high-risk surgical patients. If it is not possible or the bleeding is not controlled, the final alternative is surgery. In centers lacking Interventional Radiology, surgical treatment is required, or one should consider referral to a center able to perform angiography after the failure of a second procedure, taking into account the risks and characteristics of the hospital.

Drugs and management after treatment

The algorithm for patient management after treatment and prevention of recurrence is shown in Figure 3.

Nonsteroidal anti-inflammatory drugs (NSAIDs), acetylsalicylic acid (ASA) and clopidogrel

Mortality in patients with UGB and associated heart disease decreases if low-dose aspirin is restarted early[24], without causing a significant increase in recurrence of bleeding. Antiplatelet ther-

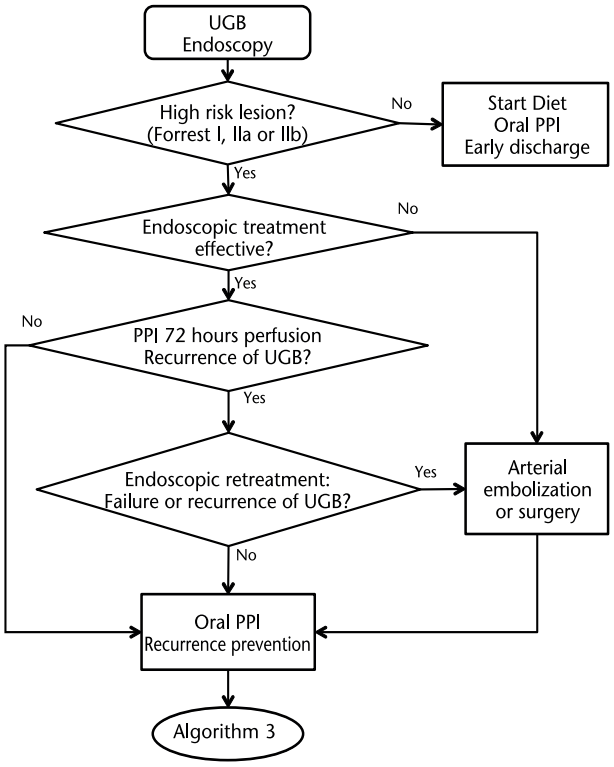

Figure 2. Algorithm 2: treatment after endoscopy. UGB: upper gastrointestinal bleeding; PPI: Proton-pump inhibitors.

apy should be reintroduced as soon as possible since the risk of a serious vascular event outweighs the risk of bleeding[1,3] (DR: strong, QE: moderate). Cardiovascular risk increases greatly from 5 to 7 days following antiplatelet withdrawal, so this limit should not be exceeded[2,24].

Patients with a history of NVUGB who require NSAIDs should be treated with a selective inhibitor of COX-2 (e.g. celecoxib) together with a PPI[1,3] (DR: strong, QE: moderate).

Patients taking ASA or clopidogrel, prasugrel or ticagrelor and presenting NVUGB, must receive daily PPI[2]. In patients with high risk of recurrence, the benefit of a prophylactic PPI outweighs the cardiovascular risk - possibly non-existent[25]- of pharmacological interaction between clopidogrel and the PPI[2]. In any case, pantoprazole does not present a significant drug interaction with clopidogrel, and can be used safely in patients taking this drug[26].

Recommendations on anticoagulants

After gastroscopy, the decision to restart anticoagulant therapy should be individualized. In general, it can be restarted when the risk of thromboembolic events outweighs the risk of rebleeding. This usually happens a few hours after endoscopic treatment of the bleeding lesion.

During the ED stay, it is recommended that LMWH be administered; in exceptional cases of very high risk of thromboembolic events (for example: patients with mitral metal prosthesis) sodium heparin should be used. Sodium heparin is preferred over other anticoagulants in these cases because its anticoagulant effect is very quickly reversed on suspending intravenous administration. In addition, where necessary, the anticoagulant effect can be reversed with protamine sulfate. LMWH has a somewhat longer half-life (about 12 hours)[13,27].

H. pylori

In patients with peptic ulcer or erosive gastroduodenitis, infection by *H. pylori* should be invetsigated (DR: strong, QE: high). If present, it must be treated and its eradication confirmed[2]. The test for *H. pylori* (urease, breath test or biopsy) performed during the acute episode is often false-negative, probably attributable to PPI treatment started on admission and perhaps the presence of blood in the stomach. Therefore, all negative test results for *H. pylori* performed in the acute phase of hemorrhage must be confirmed by a second test performed in optimal conditions[2] (DR: strong, QE: moderate).

Specifications of gastric ulcer

In patients with NVUGB due to gastric ulcer should undergo gastroscopy at 8 weeks to confirm that the ulcer has healed and to take biopsies to rule out malignancy.

Addendum

Conflict of interest: Pedro Almela declares no conflict of interest. Enric Brullet declares no conflict of interest. Xavier Calvet is a consultant for Astra Zeneca, has given talks for Astra Zeneca and Almirall-Prodesfarma and has received grants from Astra Zeneca and Janssen-Cilag. Manuel Castro declares no conflict of interest. Enrique Domínguez Muñoz is a consultant for Abbott and Axcam, has given talks for Abbott, Janssen and Almirall. Faust Feu is a consultant for Astra-Zeneca and has given talks for Astra Zeneca. Marta Gallach declares no conflict of interest. Emili Gené declares no conflict of interest. Javier P. Gisbert Asesoramiento is a consultant and has received financial support from Almirall, Janssen-Cilag, Nycomed, Astra Zeneca and Pfizer. Ángel González Galilea has given talks for Recordati, MENARINI and Astra Zeneca. Ángel Lanas is a consultant and has given talks for Astra Zeneca, Pfizer, Nicox y Bayer; he has also received research grants from Astra Zeneca

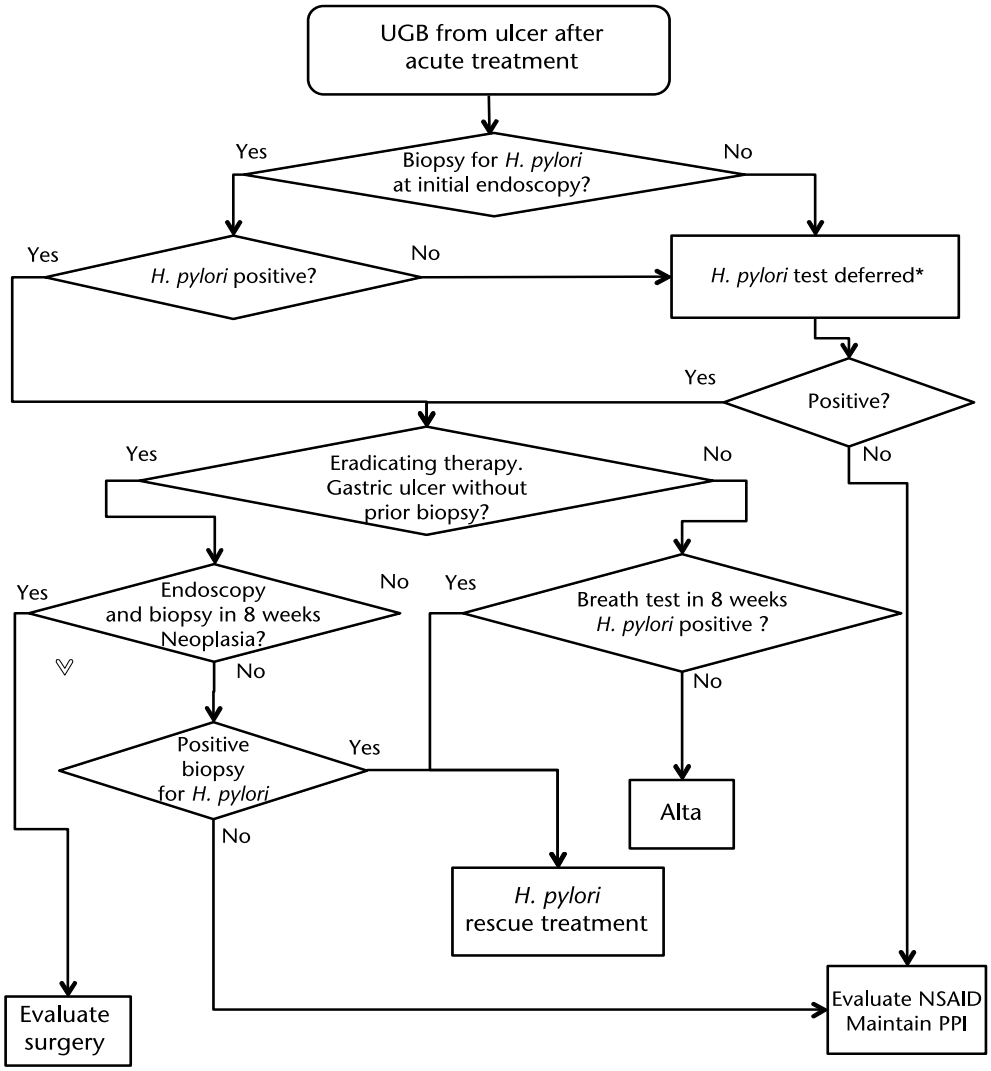

Figure 3. Algorithm 3: prevention of UGB recurrence. * Usually breath test deferred; in patients with gastric ulcer, new gastroscopy and biopsy to rule out malignancy if necessary. UGB: upper gastrointestinal bleeding; H. pylori: Helicobacter pylori; NSAIDs: non-steroidal anti-inflammatory drugs; PPI: Proton-pump inhibitors.

y Pfizer. Carlos Martín de Argila is a consultant for Astra Zeneca and Janssen, has given talks for Astra Zeneca, Janssen and Almirall. Ángeles Pérez Aisa declares no conflict of interest. Pascual Piñera declares no conflict of interest. Julio Ponce is a consultant for Astra Zeneca, has given talks for Astra Zeneca, Pfizer and Esteve, and has received research grants from Astra Zeneca, Janssen and Schering Plough. Candido Villanueva declares no conflict of interest. Albert Villoria declares no conflict of interest.

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Guía práctica para el manejo de la hemorragia digestiva alta no varicosa

Gallach M, Calvet X, Lanas A, Feu F, Ponce J, Gisbert JP, Brullet E, Pinera P, Castro M, Martín de Argila C, Domínguez Muñoz E, Almela P, Villanueva C, González Galilea A, Pérez Aisa A, García-Iglesias P, Gene E, Villoria A, Barkun A

La hemorragia digestiva alta no varicosa (HDANV) es una emergencia médica frecuente que se asocia a una considerable morbilidad y mortalidad. En los últimos años se han producido importantes avances en el manejo de la HDANV, que han permitido disminuir la recidiva hemorrágica y la mortalidad en estos pacientes. El objetivo del presente documento es ofrecer una guía de manejo de la HDANV eminentemente práctica basada en la evidencia científica y en las recomendaciones de los recientes consensos. Los tres puntos clave del manejo de la HDANV son: a) la reanimación hemodinámica precoz y la prevención de las complicaciones de la patología cardiovascular de base, que es frecuente en pacientes con HDANV; b) el tratamiento endoscópico de las lesiones con alto riesgo de recidiva; y c) el uso de inhibidores de la bomba de protones a dosis altas pre y postendoscopia. La combinación de estas medidas permite reducir la recidiva y la mortalidad de la HDANV. [Emergencias 2013;25:472-481]

Palabras clave: Hemorragia digestiva alta no varicosa. Gastroscopia. Endoscopia. Coagulación. Inhibidores de la bomba de protones. Recidiva. *H. pylori.* Antiinflamatorios no esteroideos (AINES). AAS. Clopidogrel. Úlcera gástrica.