Management of acute bleeding upper gastrointestinal ulcers in the era of endoscopic and intravenous proton pump inhibitor therapy

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BACKGROUND: Despite advances in therapy, the morbidity and mortality of gastrointestinal bleeding remains high. A review of current practice patterns was undertaken in St Boniface General Hospital, Winnipeg, Manitoba to assess the standard of care provided.
OBJECTIVE: To determine whether upper gastrointestinal bleeding (UGIB) attributable to a single acute ulcer is treated appropriately with respect to local therapy, acid suppression and *Helicobacter pylori* status.
METHODS: A retrospective chart review identified patients with consecutive acute UGIB attributable to a single gastric or duodenal ulcer presenting to a tertiary care centre over a six-month period. The lesions were classified as high- or low-risk based on endoscopic appearance. Local care of the ulcer, acid suppressive therapy and management of *H pylori* were determined by reviewing pertinent chart materials. Appropriate care was defined for all three end points a priori using literature-supported standards of care.
RESULTS: Fifty-five patients who met study criteria were identified. Twenty-six of 55 (47%) and 29 of 55 (52%) lesions were considered to be low- and high-risk respectively. Of the high-risk lesions, two of 29 received no local therapy, 24 of 29 received adrenaline injection and two had an endoclip placed. Of the 27 patients whose lesions were treated, 16 received thermal coagulation. Twenty-five of 29 (88%) received intravenous proton pump inhibitors. Thirty-three of 55 (55%) patients did not have *H pylori* status considered in their management.
CONCLUSION: Weaknesses in the management of UGIB were identified, particularly with respect to addressing the role of *H pylori*. Fragmentation and compartmentalization of patient care may be important contributing factors.

Key Words: *Management; Peptic ulcer disease*

Le traitement de l'hémorragie digestive haute aiguë à l'ère de l'endoscopie et du traitement par inhibiteurs de la pompe à proton

HISTORIQUE : Malgré les progrès de la thérapeutique, la morbidité et la mortalité associées à l'hémorragie digestive restent élevées. On procède ici à une revue des modes de pratique courante à l'Hôpital Général de Saint-Boniface, à Winnipeg, Manitoba, de façon à évaluer les normes thérapeutiques.
OBJECTIF : Déterminer si l'hémorragie digestive haute (HDH) attribuable à un seul ulcère aigu est traitée de la bonne façon en ce qui a trait à l'intervention locale, à la suppression acide et à l'éradication d'*Helicobacter pylori*.
MÉTHODES : Revue rétrospective des dossiers de patients victimes d'une hémorragie digestive haute attribuable à un ulcère gastrique ou duodénal isolé s'étant présentés dans un centre de soins tertiaires au cours d'une période de six mois. Les lésions ont été classées selon qu'elles posaient un risque faible ou élevé, résultats de l'endoscopie à l'appui. Le traitement localisé de l'ulcère, le traitement anti-acide et la prise en charge de *H. pylori* ont été déterminés par l'examen des éléments pertinents aux dossiers. Les soins appropriés ont été définis pour les trois paramètres fixés en fonction des normes thérapeutiques décrites dans la littérature.
RÉSULTATS : Cinquante-cinq patients qui répondaient aux critères de l'étude ont été recensés. Vingt-six (47 %) et 29 (52 %) des lésions, sur 55, ont été jugées associées à un risque respectivement faible et élevé. Parmi les lésions à risque élevé, deux sur 29 n'ont bénéficié d'aucun traitement local; 24 sur 29 ont été justiciables d'une injection d'adrénaline et deux, de la pose d'Endoclip. Parmi les 27 patients dont les lésions ont été traitées, 16 ont reçu un traitement par thermocoagulation, 25 sur 29 (88 %) ont reçu des inhibiteurs de la pompe à protons par voie intraveineuse; chez 33 patients sur 55 (55 %), on n'a pas tenu compte de *H. pylori* dans le plan de traitement.
CONCLUSION : Des lacunes ont été observées en ce qui a trait au traitement de l'hémorragie digestive haute, particulièrement pour ce qui est de la prise en charge de *H. pylori*. La fragmentation et la compartimentation des soins aux patients pourraient en être d'importants facteurs contributifs.

Gastrointestinal bleeding (GIB) is an important indication for hospitalization. Upper GIB (UGIB) is five times more common than lower GIB (1,2). Despite advances in knowledge and therapy, contemporary data demonstrate rebleeding, surgical and mortality rates for UGIB to be 14.1%, 6.5% and 5.4%, respectively (3). These sobering statistics mandate a review of GIB management to ensure clinical practice reflects the best treatments available (4).

REVIEW OF GIB MANAGEMENT

Local therapy

Endoscopic treatment is not required in clean-based ulcers (5-7). Intervention on lesions with active bleeding, a visible vessel or adherent clot should be undertaken. Treatment of active bleeding has been shown to be well treated with combination therapy of adrenaline injection (diluted with saline 1:10000) and thermal coagulation (8,9). However, in the treatment of

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TABLE 1
Endoscopic therapy by risk of lesion

Lesion	Total (n=55)
Low risk, n (%)	26 (47)
No treatment	24 of 26 (92)
Injection adrenaline	2 of 26 (8)
High risk, n (%)	29 (52)
No treatment	2 of 29 (7)
Injection adrenaline	24 of 29 (83)
Thermal coagulation	16 of 27 (55)
Endoclip	2 of 29 (7)

TABLE 2
Acid suppression

Acid suppression	Total (n=55)
IV PPI for high-risk ulcer, n (%)	25 of 29 (86)
IV PPI for low-risk ulcer, n (%)	5 of 26 (19)
PPI therapy total (oral or IV), n (%)	53 of 55 (96)

IV PPI Intravenous proton pump inhibitor

lesions with a visible vessel, combination treatment has not been shown to be more effective than using thermal coagulation alone (8,9). There is ongoing debate regarding the ideal management of lesions with an adherent clot (10-13).

Acid suppression therapy

Studies support the use of intravenous proton pump therapy in the high-risk lesion that has been endoscopically treated (14-19).

Helicobacter pylori

All patients presenting with an ulcerative lesion of the upper GI tract should be examined for the presence of *Helicobacter pylori* infection. The most sensitive and specific testing is accomplished through histological examination of a gastric biopsy taken at the time of endoscopy. The sample can be tested for urease production if *H pylori* is not identified by the pathologist. A less desirable approach consists of measuring antibody levels against *H pylori*. All patients who test positive for *H pylori* in the setting of an acute ulcer presentation should receive eradicative therapy at some point.

AIM

The aim of the present study was to determine whether treatment of UGIB attributable to acute ulcers was consistent with contemporary management practices (4).

METHODS

There are two tertiary teaching hospitals in Winnipeg, Manitoba (population 750,000). Both centres have a dedicated GI bleed service which provides 24 h consultation and endoscopic intervention for patients presenting with acute GIB. The service is staffed by gastroenterologists and general surgeons. Patients presenting with GIB requiring hospitalization are admitted under the care of a clinical teaching unit, either medical or surgical. The GI bleed service functions in the capacity of a consultative team.

A retrospective chart review for a six-month period dated January to June 2002 was undertaken. *International Classification of Diseases, Ninth Revision* (ICD-9) (20) codes on patient discharge summaries were used by the medical records department to extract charts. The ICD-9 codes extracted included GI bleed (578), peptic ulcer disease (536), gastric ulcer (531) and duodenal ulcer (532).

Charts were reviewed by a senior GI Fellow and data were collected using a standardized method. The Fellow reviewed the entire hospital chart with specific attention to the GI bleed team consultation, the endoscopy report, emergency room record if present, doctors orders, chart notes made by the GI bleed team, medication records, discharge summary, discharge recommendations and pathology and microbiology reports.

To meet entry criteria, the endoscopy report had to document an acute gastric or duodenal ulcer as the source of the bleeding. Patients whose source of bleeding were diagnosed as a nonulcer source, multiple sources or unknown source were excluded.

The present review aimed to determine how the ulcer was treated with regard to the three issues relevant to the management of UGIB; specifically:

- local treatment (source document: endoscopy report);
- acid suppressive therapy (source documents: physician order sheets and drug administration sheets); and
- *H pylori* testing and eradication (source documents: GI consultation record, pathology report, microbiology report, drug administration sheets, chart progress notes, discharge summary and discharge recommendations to primary care physician).

High-risk lesions were defined as lesions with adherent clot, visible vessel or actively bleeding ulcer. Low-risk lesions included clean-based ulcers or ulcers with heme stains.

RESULTS

Two hundred eighty charts were identified by medical records which fulfilled the previously stated ICD-9 codes during the study interval. A review of these charts identified 55 patients that met entry criteria; specifically, an acute GI bleed referred to the GI bleeding service which was attributable to a gastric or duodenal ulcer. Of the 55 patients, 42 were treated by a gastroenterologist and 13 by a surgeon.

Twenty-four of the 26 patients diagnosed with clean-based (low-risk) ulcers received no endoscopic intervention; two received endoscopic therapy (injection) (Table 1). Twenty-four of the 29 patients diagnosed with high-risk lesions were treated with injection therapy, which consisted of a variable dose of adrenaline diluted with saline 1:10000. Sixteen of 29 high-risk lesions were treated with electrical or thermal energy. Another two high-risk lesions were treated with a hemoclip. Two of the 29 patients diagnosed with high-risk lesions did not receive any endoscopic therapy (Table 1).

Eighteen of 55 patients (33%) had *H pylori* biopsies taken at the time of their endoscopy. An additional seven of 55 patients had *H pylori* addressed in some manner; either serological testing was obtained or recommended, or empirical antibiotic therapy was given or recommended in the future. Thirty of 55 patients (55%) presenting with an UGIB attributable to an upper GI ulcer did not have an *H pylori* biopsy obtained, serology requested or empirical therapy recommended.

Twenty-five of 29 patients with high-risk ulcers and five of 26 patients with low-risk ulcers received proton pump

inhibitor therapy intravenously (Table 2). The intravenous dosage was a bolus of 80 mg of pantoprazole followed by an intravenous infusion of 8 mg/h. The duration of the infusion was not reviewed.

The all-cause mortality in the present study was 11% (six of 55 patients). All deaths occurred in patients who suffered with multiple medical comorbidities. The mean age of these six patients was 78 years. The mean time to death was 42 days after admission (range two to 115 days).

DISCUSSION

The present review overwhelmingly demonstrates that physicians are treating UGIB attributable to an acute ulcer appropriately with respect to local therapy and acid suppression.

Unfortunately, *H pylori* testing and treatment is not maximized. Failure to undertake biopsy acquisition for *H pylori* has been described by other workers (21). In this national database of 8000 patients with acute upper gastrointestinal ulcers, 33% did not have biopsies taken for *H pylori*. Of note, the database included only patients with nonbleeding acute ulcers, whereas all of our patients were presenting with bleeding ulcers. This may explain the higher rate of nonacquisition in our study.

The omission of *H pylori* biopsy acquisition is especially disappointing because eradication of *H pylori* is the greatest advancement in peptic ulcer disease management to date. We speculate that this may be attributable to compartmentalized care. During presentation, UGIB management is focused on volume repletion and stabilization of the patient. During endoscopy, local therapy is foremost; acquisition of the biopsy for *H pylori* may be undermined. The disparity between the national database review and our own data support this speculation. Thereafter, hospitalization may not afford opportunities to review the issues pertinent to UGIB. Either short or prolonged hospital stay may detract from the importance of *H pylori* testing and treatment if *H pylori* biopsy was not obtained during the gastroscopy. As well, fragmentation of care among the endoscopist, the admitting physician and the family physician may further contribute to omission of *H pylori* testing and treatment.

CONCLUSIONS

Despite the management of acute GIB by a dedicated bleed service, our review revealed significant weaknesses in the management of this common and costly disease. High-risk lesions are not uniformly treated with endoscopic interventions. Of greater magnitude is the failure in acquiring an *H pylori* biopsy, or undertaking serological testing or advising empirical therapy in those in whom biopsy was not obtained. Compartmentalization and fragmentation of care may contribute to oversight. Regardless, the GI bleed consultant must be vigilant to ensure *H pylori* status and treatment is addressed because the organism is integral to the pathogenesis of peptic ulcer disease.

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