Is Early Endoscopy in the Emergency Room Beneficial in Patients with Bleeding Peptic Ulcer?  
A « Fortuitously Controlled » Study

THESE

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DOCTEUR EN MEDECINE

par

Gerold Schacher

Médecin diplômé de la Confédération Suisse Originaire de Lucerne et Escholzmatt/LU

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Est-ce qu'une endoscopie précoce en salle de réanimation est bénéfique pour les patients avec une hémorragie digestive sur ulcère peptique ?
Une étude « fortuitement contrôlée »

Introduction et objectifs : les études randomisées antérieures montrent qu'une endoscopie précoce améliore les résultats Cliniques chez les patients qui présentent une hémorragie sur ulcère peptique. Toutefois, dans la plupart de ces études, le terme « précoce » s'applique aux endoscopies pratiquées dans les 24 heures après l'admission. En utilisant la durée d'hospitalisation comme paramètre principal de l'évolution Clinique, nous avons comparé les résultats d'une endoscopie pratiquée immédiatement après l'admission (endoscopie précoce en salle de réanimation : EPR) à ceux d'une endoscopie pratiquée au cours des premières 24 heures d'hospitalisation dans le centre endoscopie mais pendant les heures de travail normales (endoscopie différée au centre d'endoscopie : EDC).

Patients et méthodes : nous avons effectué une analyse rétrospective des données concernant 81 patients consécutifs qui ont été admis en 1997 et 1998 pour une hémorragie sur ulcère peptique (âge compris entre 16 et 90 ans). De ces 81 patients, 38 ont subi une EDC (le traitement standard à l'hôpital) et 43 ont subi une EPR. Les patients dans les deux groupes étaient comparables concernant les critères d'admission et ils présentaient un risque égal en ce qui concerne leur risque d'évolution défavorable (évalué par le « Baylor Bleeding Score » et par le score de Rockall). Ils ne se distinguaient que par le traitement reçu. Une hémostase endoscopique était pratiquée à chaque fois que cela était possible et dans tous les patients avec une hémorragie d'ulcère de type Forrest I, IIa et IIb.

Résultats : dans les deux groupes nous avons trouvé des taux similaires pour les récidives d'hémorragie (16 % chez les patients EDC vs. 14 % chez les patients EPR) et pour les saignements persistants (8 % chez le patients EDC vs. aucun des patients EPR) ainsi qu'une durée d'hospitalisation comparable (5,1 jours pour les patients EDC vs. 5,9 jours pour les patients EPR). Entre les deux groupes, aucune des différences dans ces paramètres n'était statistiquement significative. Aucun des patients n’est décédé.

Conclusions : l’endoscopie précoce en salle de réanimation n’a pas amélioré l’évolution clinique chez nos 81 patients consécutifs avec un ulcère peptique hémorragique.
Patients and Methods: We conducted a retrospective analysis of patients with bleeding peptic ulcer, though most of these studies define "early" as endoscopy performed within 24 hours after admission. Using the length of hospital stay as the primary criterion for the clinical outcome, we compared the results of endoscopy done immediately after admission (early endoscopy in the emergency room, EEE) with endoscopy postponed to a time within the first 24 hours after hospitalization, but still during normal working hours ("delayed" endoscopy in the endoscopy unit, DEU).

Patients and Methods: We conducted a retrospective analysis of data from 81 consecutive patients with bleeding peptic ulcer admitted in 1997 and 1998 (age range 16–90 years). Of these 81 patients, 38 underwent DEU (the standard therapy at the hospital) and 43 underwent EEE. Patients in the two groups were comparable with regard to admission criteria, were equally distributed with respect to their risk of adverse outcome (assessed using the Baylor bleeding score and the Rockall score), and differed only in the treatment they received. Endoscopic hemostasis was performed whenever possible in all patients with Forrest types I, IIa, and IIb ulcer bleeding.

Results: We found similar rates in the two groups for recurrent bleeding (16% in DEU patients vs. 14% in EEE patients), persistent bleeding (8% in DEU patients vs. none in EEE patients), medical complications (21% in DEU patients vs. 26% in EEE patients), the need for surgery (8.5% in DEU patients vs. 9.5% in EEE patients), and the length of hospital stay (5.1 days for DEU patients vs. 5.9 days for EEE patients). None of the differences between the two groups in these parameters were statistically significant. None of the patients died.

Conclusions: Early endoscopy in an emergency room did not improve the clinical outcome in our 81 consecutive patients with bleeding peptic ulcer.

Introduction

Endoscopic hemostasis has been shown to improve the outcome for patients presenting with ulcer bleeding. It favorsably affects recurrent bleeding, the need for surgery, and, probably, survival [1–4]. The question of whether endoscopic hemostasis should be performed early after hospital admission has also been examined in randomized trials [5,6], in observational cohort studies [7–9], and in a systematic review [10], and these papers have described early endoscopy as advantageous. However, it is difficult to interpret these studies as the definitions of "early" and "late" endoscopy vary widely. In most studies, "early" endoscopies were defined as examinations which were performed within the first 24 hours, compared with "late" endoscopies, which were performed after several days, although this distinction is not in fact a relevant one in most hospitals. Rather, endoscopists want to know if endoscopic hemostasis needs to be performed by an emergency team in an emergency room, immediately after hospital admission, as soon as the diagnosis of upper gastrointestinal bleeding has been made (early endoscopy in the emergency room, EEE). The alternative to this emergency procedure is an endoscopy performed within the first 24 hours by the normal endoscopy team in an endoscopy unit (delayed endoscopy in an endoscopy unit, DEU). Using this approach, the patient is assigned to the normal endoscopy department. During the delay of several hours’ duration before endoscopy, these patients are closely supervised in the emergency department and receive treatment for blood loss. EEE requires that a special team is available around the clock; DEU does not. To the best of our knowledge, the question of which of these two courses of action proves more beneficial to the patient has not yet been examined.

We had an opportunity to investigate this very question because, in 1997 and 1998, the gastroenterologists of the Lausanne University Hospital held differing opinions about the benefits of EEE.

Patients and Methods

This study reports on a retrospective analysis made of data gathered from 81 consecutive patients with bleeding peptic ulcer who were admitted to the Lausanne University Hospital in 1997 and 1996 (age range 16–90 years). The hospital’s five attending gastroenterologists agreed on the use and techniques of endoscopic hemostasis and second-look endoscopy, but their views on EEE differed strongly. After examination in the admission unit, patients with suspected ulcer bleeding were assigned, depending on the preference of the gastroenterologist on duty, to undergo either EEE or DEU. Of the 81 patients who presented in this way to the admission unit, 38 underwent DEU (the consistent preference of three gastroenterologists and the standard, or “control”, treatment at the hospital at the time), and 43 others underwent EEE (the option always used by the other two attending gastroenterologists). The decision on whether patients were assigned to treatment by EEE or DEU depended solely and randomly on which gastroenterologist was on call and was independent of the patient’s condition. As a consequence, patients in the two groups were comparable with regard to admission criteria, were equally distributed with respect to their risk of adverse outcome (assessed using the Baylor bleeding score and the Rockall score), and differed only in the treatment they received. This constituted a "fortuitously controlled" study, a clinical trial in which it was possible to compare two similar groups [11]: by comparing the two groups, we were therefore able to formulate and test the hypothesis that EEE is better than DEU.

In DEU patients, endoscopy was performed after a delay of up to 3 hours by an emergency team in an endoscopy unit situated near the resuscitation room of the emergency department (Figure 1). DEU patients remained in the emergency ward and were monitored with respect to hemodynamic parameters until their endoscopy, which was performed in the endoscopy unit by the normal endoscopy team. This was done within 24 hours in 84% of the DEU patients; 16% of the DEU patients arrived on a Saturday and had their endoscopy within 48 hours. After endoscopy (EEE or DEU), patients were sent to the intensive care unit, the continuous care unit, or a hospital ward, depending on clinical and endoscopic outcome predictors.

Assessment of Clinical Parameters

The Baylor bleeding score was established for all patients [12,13]. This score is used to predict the risk of rebleeding. It scores three...
pre- and two postendoscopic risk factors: age, the number of concurrent illnesses, the severity of these illnesses (chronic, acute, or life-threatening), endoscopic bleeding site, and endoscopic stigma of bleeding. We defined a low-risk group (Bayel pre-endoscopic score of 5 or less, postendoscopic score of 10 or less), and a high-risk group (pre-endoscopic score over 5 and/or postendoscopic score over 10).

We also established the Rockall score for all patients. This score can be used in all types of upper gastrointestinal hemorrhage and is made up of three pre- and two postendoscopic risk factors: age; the presence of co-morbidity; shock, diagnosis (Mallory-Weiss, malignancy, "all other diagnoses"); and endoscopic stigma of recent hemorrhage. Pre-endoscopic scores were determined by interview on admission of the patients to the hospital in both the EEE and DEU groups, whereas postendoscopic scores were determined 10 hours later in DEU patients than in EEE patients.

Upper gastrointestinal hemorrhage was defined as hematemesis, melena or hematochezia of upper gastrointestinal origin. Recurrent bleeding was defined as upper gastrointestinal hemorrhage which occurred within 14 days after initial presentation and a symptom-free interval of more than 6 hours following endoscopically documented hematemesis.

Shock on admission was defined according to the Rockall score as the recording of a systolic blood pressure of less than 100 mm Hg. Shock during hospital follow-up was defined as a systolic blood pressure recording of less than 80 mm Hg, or a systolic blood pressure of less than 90 mm Hg plus a heart rate greater than the systolic blood pressure, and/or the need for vasopressor amine.

Outcomes
In this comparison of EEE and DEU, the primary outcome parameters were recurrent bleeding, the need for surgery, medical complications (any acute illness or worsening of a chronic illness within 14 days of the initial episode of bleeding). The secondary outcome parameters were recurrent bleeding, the need for surgery, medical complications occurred with the same frequency in the two groups. (Table 4). After the initial ulcer bleeding, three patients fulfilled the criteria for persistent bleeding (these patients were all from the DEU group, P = 0.06, but still not significant); 12 patients had recurrent bleeding (10% in the DEU group vs. 14% in the EEE group); medical complications occurred with the same frequency in the two groups; and the need for surgery was also similar (8% in the DEU group vs. 9% in the EEE group). Indications for surgery were failure of initial endoscopic treatment in one patient (in the EEE group) and rebleeding in six patients (three in the DEU group, three in the EEE group). None of the patients died.

Discussion
To test our hypothesis that "early" endoscopy in the emergency room (EEE) is more advantageous to the patient than "delayed" endoscopy in the emergency unit (DEU), we analyzed data from patients with ulcer bleeding who underwent endoscopy with an average delay of 2 hours after hospital admission by an emergency team (the EEE group). This rapid intervention did not shorten the hospital stay when compared to "delayed" endoscopy in an endoscopy unit during normal working hours, performed under an median delay of 12 hours (the DEU group). The outcomes in EEE and DEU patients were also similar with respect to recurrent bleeding, endoscopy-related complications, medical complications, the need for surgery, and mortality. We were

Table 2 Forrest classification of ulcer bleeding in the DEU and EEE patient groups

<table>
<thead>
<tr>
<th>Category</th>
<th>DEU group (n = 38)</th>
<th>EEE group (n = 43)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active bleeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forrest A</td>
<td>9 (24%)</td>
<td>8 (19%)</td>
<td>0.1</td>
</tr>
<tr>
<td>Forrest B</td>
<td>8 (21%)</td>
<td>9 (21%)</td>
<td></td>
</tr>
<tr>
<td>No active bleeding</td>
<td></td>
<td></td>
<td>0.99</td>
</tr>
<tr>
<td>Forrest A</td>
<td>26 (68%)</td>
<td>20 (46%)</td>
<td>0.1</td>
</tr>
<tr>
<td>Forrest B</td>
<td>10 (26%)</td>
<td>23 (53%)</td>
<td>0.2</td>
</tr>
<tr>
<td>Forrest A</td>
<td>3 (8%)</td>
<td>8 (18%)</td>
<td>0.2</td>
</tr>
<tr>
<td>Forrest B</td>
<td>4 (11%)</td>
<td>5 (12%)</td>
<td>0.7</td>
</tr>
<tr>
<td>Forrest A</td>
<td>13 (34%)</td>
<td>6 (14%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Forrest B</td>
<td>10 (26%)</td>
<td>4 (9%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 Features of the endoscopies carried out in the DEU patients and in the EEE patients

<table>
<thead>
<tr>
<th>Feature</th>
<th>DEU group (n = 38)</th>
<th>EEE group (n = 43)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median delay from admission to first endoscopy, hours</td>
<td>12.0</td>
<td>2.1</td>
<td>0.001</td>
</tr>
<tr>
<td>Mean number of endoscopies performed during hospitalization</td>
<td>2.1</td>
<td>2.3</td>
<td>0.3</td>
</tr>
<tr>
<td>No. of patients who underwent therapeutic treatment</td>
<td>18 (47.4%)</td>
<td>13 (76.7%)</td>
<td>0.006</td>
</tr>
<tr>
<td>No. of endoscopically treated patients with active bleeding (%)</td>
<td>9/18 (50%)</td>
<td>17/33 (51.5%)</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Outcome in Low-Risk and High-Risk Patients
When comparing low-risk and high-risk patients, stratified according to the Bayel bleeding score and independent of whether the initial endoscopy was carried out, the hospital stay was longer in the high-risk group than in the low-risk group (0.6 days vs. 4.2 days, P = 0.002). The incidence of medical complications was also higher in this group (36% vs. 9%, P = 0.004). No significant difference between the two risk groups was found with respect to the need for surgery.

Outcome According to Where the Endoscopy was Carried Out
We found no significant difference in length of hospital stay between DEU and EEE patients (Table 4). Regarding the other outcome parameters we analyzed, no statistically significant differences were found between the two groups. No complications were found between the two groups. (Table 4). After the initial ulcer bleeding, three patients fulfilled the criteria for persistent bleeding (these patients were all from the DEU group, P = 0.06, but still not significant); 12 patients had recurrent bleeding (10% in the DEU group vs. 14% in the EEE group); medical complications occurred with the same frequency in the two groups; and the need for surgery was also similar (8% in the DEU group vs. 9% in the EEE group). Indications for surgery were failure of initial endoscopic treatment in one patient (in the EEE group) and rebleeding in six patients (three in the DEU group, three in the EEE group). None of the patients died.
In conclusion, based on the results of our study, the emergency treatment of bleeding ulcers is not a valid argument for performing endoscopy by an emergency team within a few hours after hospital admission. However, our results are preliminary and need to be tested in a prospective randomized trial: they serve as an ethical background for such a study. Furthermore, studies in patients with other types of upper gastrointestinal bleeding are needed in order to further assess the validity of emergency endoscopy.

References