Research Article
Prognostic Factors Of Patients with Upper Gastrointestinal Bleeding (UGIB) in Hospital Sultanah Nora Ismail, Johor

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ABSTRACT
Patients with upper gastrointestinal bleeding (UGIB) has high risk of mortality despite the advancement in technology and treatment options. This study was conducted to identify the prognostic factors of patients with UGIB. This retrospective (record review) study involved patients diagnosed with UGIB between 1st January 2011 and 31st December 2013 in adult wards (surgical, medical and orthopedic) and intensive care unit. Individual and clinical characteristics were the variables under study and outcome was taken as time of diagnosis till death due to the disease. Data was analysed by STATA version 11 using multivariable cox proportion hazard regression analysis. Among 263 patients diagnosed with UGIB, 62 patients were event (death due to UGIB) and 201 patients were censored (death due to other disease, loss to follow up, discharge, transfer to other hospital or alive until the end of the study). Multivariable cox proportion hazard regression analysis found patients with variceal bleeding were at 3.69 times (95% CI: 1.31, 10.45) risk of mortality than patients with non-variceal bleeding (p=0.013). Patients with comorbidity were at 26.37 times (95% CI: 3.51, 198.26) risk of mortality than patients without comorbidity or unknown status (p=0.001). Aetiology and comorbidity (clinical characteristics) were the prognostic factors for patients with UGIB.

Keywords: prognosis factors, upper gastrointestinal bleeding, aetiology, comorbidity

1. Introduction
Studies in western countries found that mortality rate due to upper gastrointestinal bleeding (UGIB) in recent decade ranged from 8 to 14%. The rate was dependent on the average age of patients and frequent and continuous use of nonsteroidal anti-inflammatory drugs [1]. A recent study done by Bardou et al., [2] reported that despite the improvements in the management of this condition, mortality rate was at 5 to 10%. Severe comorbidities among elderly and concomitant antiplatelet or anti-coagulator therapy were reported as common contributors for this disease that may be life-threatening [3].

In Asian countries like Korea, UGIB remains a clinically important issue due to increase in elderly population, use of nonsteroidal anti -inflammatory drugs (NSAID) and in-hospital UGIB cases [4]. Japan is also experiencing the same problem as0 the incidence of UGIB is increasing in the aging society [5]. In Thailand, a study found that hospitalized incidence rate of UGIB was 166.3 admissions per 100 000 populations [6].
In Malaysia, hospital death due to UGIB remains about 10% and this percentage has not reduced over the past 50 years [7]. Lakhwani et al., [8] has also reported similar trend of UGIB in one of the government hospital in Malaysia and most of the cases were contributed by elderly patients with complications of peptic ulcer disease. In another study, a researcher found that peptic ulcer was one of the commonest causes of hospital admission and major cause of mortality of the disease [9]. Recent study done by Noraini et al [10] also reported that the estimated rate of mortality from UGIB was between 4 to 14% and UGIB remains the commonest medical emergency in Malaysia.

UGIB is a primary concern with the increasing proportion of elderly population which could lead to higher prevalence of UGIB cases, a potentially life threatening medical emergency. Therefore, every clinical management team needs to provide better treatment and management options for UGIB patients based on their individual need. This study intended to explore the prognostic factors of UGIB which may contribute to the formulation of UGIB management guidelines.

2. Materials and Methods

This retrospective study (medical record review) involved 263 patients which were diagnosed with UGIB between 1st January 2011 and 31st December 2013 in adult wards (surgical, medical and orthopedic) and intensive care unit. The subjects developed UGIB within 24 hours of hospital admission. The study was conducted in Hospital Sultanah Nora Ismail in Johor, a general hospital in Malaysia.

Data was collected by reviewing the patients’ medical record between 1st of September, 2014 to 15th of January, 2015. The study was approved by Ministry of Health Malaysia (NMRR-14-687-21637) and the Human Ethics Committee, USM (USM/JEPEM/14070252). Study outcome was time to event or death due to UGIB. Study time was measured by months from the time of diagnosis of UGIB made by registered medical officer until death due to the disease. The data collected were patients’ characteristics such as age, sex, race, smoking status, type of diagnosis, aetiology, comorbidity, NSAID users and treatment. Data were analysed using Stata software version 11 by multivariable cox proportional hazard regression analysis.

3. Results

The study found that among the 263 subjects, 62 patients were classified as event (death due to UGIB) and 201 patients were classified as censored (death due to other disease, loss to follow up, discharge, transferred to other hospitals or alive until the end of the study).

Using multivariable cox proportional hazards regression analysis, aetiology and comorbidity variables were found to be the significant prognostic factors for patients with UGIB in Hospital Sultanah Nora Ismail, Johor. Patients with variceal type bleeding had 3.69 times higher risk of mortality compared to patients with non-variceal type bleeding. Patients with comorbidity had 26.37 times higher risk of mortality compared to patients with no comorbidity (Refer table 1).

4. Discussion

Sangchan et al., [11] concluded that risk mortality were higher among patients with variceal bleeding than non-variceal bleeding. However, a study done by Chattercharoenwithaya et al., [12] only found significant association between aetiology and risk of mortality in UGIB patients after analysing with univariate analysis of Cox regression. After adjustment for important confounder such as age, the variable did not become a significant prognostic factors (p=0.390).

Mustapha et al., [13] reported that oesophageal varices were the commonest cause of UGIB in their study and was responsible for most of the mortalities. The six year- retrospective study carried out in Nigeria recorded that among 106 patients involved in the study, 10.4% of them died with all the mortalities were due to variceal bleeding. In another study conducted by Robert et al., [14], variceal bleeding was a significant prognostic factor for mortality of the disease as analysed by multivariable logistic regression. They found that varices was an important prognostic factor as the adjusted hazard ratio was 2.80 (95% CI OR: 1.12, 7.01) compared to all other and unspecified aetiologies. A latest study done by Alatise et al [15] also mentioned the importance of variceal bleeding as a prognostic factor for the disease mortality when patient with this aetiology contributed to 67.4% of the mortality causes.

On the other hand, Robert et al., [14] also found that comorbidity contributed to higher mortality of patients with the disease. In the study, the effects of comorbidity on mortality risk by individual illness were identified. Circulatory, liver, and renal diseases were found to be a highly significant prognostic factor (p= < 0.001) by multiple logistic regression with hazards ratio of 1.49 (95% CI OR: 1.36, 1.62), 7.89 (95% CI OR: 6.44, 9.68) and 3.93 (95% CI OR: 3.02, 5.12), respectively.

In a retrospective study involving several European countries such as Belgium, Greece, Italy, Norway, Portugal, Spain and Turkey found that the mortality rate 30 days after the initial bleeding was highly statistically associated with comorbidity, p< 0.001 [15]. Multiple logistic regression analysis revealed that the mortality risk of patients with comorbidities from the participated countries were 1.72 (95 % CI OR: 1.40, 2.12) higher compared to patients without comorbidity. Gado et al., [16] explained that the majority (68%) of UGIB patient had major comorbidity. The study also showed that the rate of mortality in patients with major comorbidity was higher compared to patients without any major comorbidity (20.9% versus 2.8%).

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5. Conclusion

Aetiology and comorbidity were the most important prognostic factors of UGIB. These findings was consistent with others studies and should be taken into consideration by the clinical management team in hospital setting when making guidelines for treatment options.

6. Acknowledgements

This study would not have been possible without the support from the Hospital Sultanah Nora Ismail, Batu Pahat Johor and Universiti Sains Malaysia, and all the individuals directly or indirectly involved in this study.

References


Footnote:
Forward stepwise cox proportional hazards regression model was applied.
Two way interactions between variables and multicollinearity were not detected.
Hazards function and Log-log graph were applied to check the model assumption and found fulfilled.
Global ($p=0.995$) and separate test (aetiology, $p=0.927$, comorbidity, $p=0.969$) were performed.
Regression diagnostic based on Cox-Snell, Martingale, deviance and influence residuals were done and model relatively fitted well, no transformation of covariate need.

<table>
<thead>
<tr>
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<th>Regression coefficient ($\beta$)</th>
<th>adjusted hazards ratio (95% CI)</th>
<th>Wald statistic</th>
<th>p-value</th>
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Table 1: Prognostic factor of patients with UGIB in Hospital Sultanah Nora Ismail, Johor.