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**ROLE OF AIMS65 IN PREDICTING THE MORTALITY IN PATIENTS WITH
ACUTE UPPER GASTROINTESTINAL BLEEDING**

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ABSTRACT

Introduction: Acute upper gastrointestinal bleeding (UGIB) is common life threatening condition, causes significant health & economic burden. The evaluation of severity of UGIB is important. For this purpose several risk assessment scores has been developed. However these are not routinely adopted in clinical practice. AIMS65 score is new and very simple to use.

Objective: - To determine the frequency of mortality in UGIB patients presented with AIMS65 SCORE ≥ 2 .

Material and methods: DESIGN: Case series. **SETTING:** - Liaquat University Hospital at Jamshoro. **Duration:** - Six months from 27 MAY 2015 to 26 NOVEMBER 2015. **Subject and Methods:** A total of 142 patients of with UGIB with AIMS65 ≥ 2 were included. Required laboratory data was obtained from laboratory of hospital. Patients were followed for 30 days to assess the survival status i.e. alive or dead. All the information gathers into proforma.

Results: Frequency of mortality in UGIB having AIMS65 score ≥ 2 was 35.92% patients. Mortality in patients with AIMS65 score 2 had 4.3% (1/23), score 3 had 20.6% (7/34), score 4 had 49.4% (38/145) and score 5 had 62.5% (5/8) mortality. Rate of mortality was significantly high in AIMS65 score 4 to 5 as compare to 2 to 3 score [50.59% vs. 14.04%; p=0.0005].

Conclusion: It is concluded that AIMS65 is a simple, accurate, non-endoscopic risk score that can be applied in patients with acute UGIB.

Keywords: Acute upper gastrointestinal bleeding, AIMS65 Score, Mortality

INTRODUCTION

Acute upper gastrointestinal bleeding (UGIB) is common life threatening condition, causes significant health & economic burden [1] at an estimated costs of 750 million dollars [2]. It is 4times as common as lower GI bleeding [3]. UGIB means bleeding from bowel wall or mucosa [4] proximal to duodeno-jejunal flexure [5] or ligament of trietz [6].

The true incidence of UGIB is not known in Pakistan but it is expected to be compatible with global statistics [7]. Worldwide incidence of UGIB is 100/100000 [3, 8] & prevalence of 170/100000 people per annum [2]. Despite all measures its mortality remains high around 10% to 15% [1, 8, 9]. Rebleeding rate as high as 10-30% [8]. The most common causes are peptic ulcer & esophagi gastric varices [10].

The evaluation of severity of UGIB is important to identify who will receive the most benefit from hospitalization for cost monitoring and aggressive resuscitation [6]. Also the higher incidence & associated mortality make adequate risk assessment mandatory [9]. For this purpose several risk assessment scores has been developed [11]. However these are not routinely adopted in clinical practice because of their complexity [11]. AIMS65 score is new and very simple to use [12]. 5 factors are included, each factor carry 1score [11]

leading to 0-5 score [12]. IN one study [9] score 3 have 10.3%, 4 have 16.5%, 5 have 24.5% mortality. Incorporating this simple score into clinical practice should allow internist to evaluate patients requiring hospitalization more effectively [6].

My rationale of this study is to determine the applicability of AIMS65 score in UGIB patients in our set up, as it is very simple bed side score to calculate, cost effective , as requiring data is available by routine laboratory tests & no procedure require for this score, it allows very rapid assessment of patients and differentiates quickly between low and high risks patients which may help to determine the decision of admission, endoscopy & other measures there by allowing more efficient use of resources. AIMS65 accurately predicts mortality, and its systematic use could result in financial savings that is most valuable in resource poor countries like Pakistan.

OBJECTIVE

To determine the frequency of mortality in UGIB patients presented with AIMS65 SCORE ≥ 2 .

MATERIALS AND METHOD

STUDY SETTING: - This study was conducted in tertiary care Liaquat University Hospital at Jamshoro.

STUDY DURATION: - Six months from 27 may 2015 to 26 November 2015.

STUDY DESIGN: Case series.

SAMPLE SIZE: The sample size calculation is done by using “RAOSOFTWARE FOR SAMPLE SIZE CALCULATION”. AIMS65 SCORE -3 is correlated with mortality of 10.3% in UGIB patients worldwide. By taking mortality of 10.3% with 95% confidence interval and 5% margin of error, the required sample size is 142.

SAMPLING TECHNIQUE: Non probability consecutive

INCLUSION CRITERIA

- Patients age between 18 to 65 years or either gender
- All patients of with UGIB (bleeding proximal to the ligament of treats. Patients may present with haematemesis [6] (vomiting of fresh blood / coffee ground color fluid), or maelena (black tarry stool) or haematochezia [5], or nasogastric aspiration of coffee ground, black or bloody contents) and also patients having history of UGIB in past 10 days of hospital presentation was included in study.
- Patients having AIMS65 score of ≥ 2 .

AIMS65 Score include	Score
Albumin < 3.0g/dl	1
International Normalize Ratio >1.5	1
Mental Status: GCS <14	1
Systolic Blood Pressure <90mmHg	1
Age ≥ 65 years	1
0-1 Score considered as low risk & 2-5 score considered as high risk for mortality	

EXCLUSION CRITERIA

- Patients with or having h/o haemoptysis, epistaxis.
- Patients with or h/o gum bleeding.
- Patients having history of maxillofacial injury or trauma.

DATA COLLECTION PROCEDURE:-

The study was conducted after the approval of institutional ethical committee. After explaining the nature and purpose of study consent was taken from patients/ attendants of UGIB. Structured proforma was use to collect the data from patients presented in Liaquat university hospital Jamshoro, who fulfilling the inclusion criteria. Required laboratory data was obtained from laboratory of hospital. Patients were followed for 30 days to assess the survival status i.e. alive or dead (if died within 30 days).

DATA ANALYSIS: - After collection, SPSS version 16 were used to analyses the data. Mean and standard deviation were calculated for continuous variable such as Age, weight, height, BMI. Categorical variables such as Gender, diabetes, hypertension, Smoking Status, CVD, Obesity and Mortality were calculated as frequency and percentages. Mortality with respect to AIMS65 score was also assessed and chi-square test was applied to observe rate of mortality. Effects modifiers like age, gender, D.M, HTN, Smoking Status, Obesity and CVD was controlled through

stratification. Post stratification chi square test was applied by taking $p\text{-value} \leq 0.05$ as significant.

RESULTS

In this study, the mean height of patients was 46.63 ± 13.09 years. There were 49.3% male and 50.7% female. The mean weight, height and BMI of patients were 74.11 ± 16.49 kg, 162.13 ± 8.70 cm and 28.16 ± 5.97 kg/m². Out of 145 patients, diabetic mellitus was observed in 77 (54.2%) cases, 84 (59.2%) were hypertensive, 33 (23.2%) were smoker, obesity (BMI >30kg/m²) was observed in 45 (31.1%) cases and CVD was found in 39 (27.5%) cases **Table 1**.

Out of 142 patients, 30-days mortality occurred in 51 (35.92%) patients **Figure 1**.

In patients who had AIMS score 2, 1(4.3%) patient died. In patients who had AIMS score 3, 7(20.6%) patients died. In patients who had AIMS score 4, 38(49.4%) patients died. In patients who had AIMS score 5, 5(62.5%) patient died. The mortality was significantly high in AIMS score 4 to 5 as compare to 2 to 3 score [50.59% vs. 14.04%; $p=0.0005$] **Table 2**.

Data was stratified for effect modifiers like age, gender, diabetes, hypertension, smoking, obesity and CVD. There was insignificant impact of these effect modifiers on mortality of UGIB patients with AIMS65 \geq 2 **Table 3**.

Table 1: Baseline characteristics of patients

Age (Years)	46.63 \pm 13.09
Gender (M / F)	70 (49.3%) / 72 (50.7%)
Weight (kg)	74.11 \pm 16.49
Height (cm)	162.13 \pm 8.70
BMI (kg/m ²)	28.16 \pm 5.97
Diabetes	77 (54.2%)
Hypertension	84 (59.2%)
Smoking	33 (23.2%)
Obesity	45 (31.1%)
CVD	39 (27.5%)

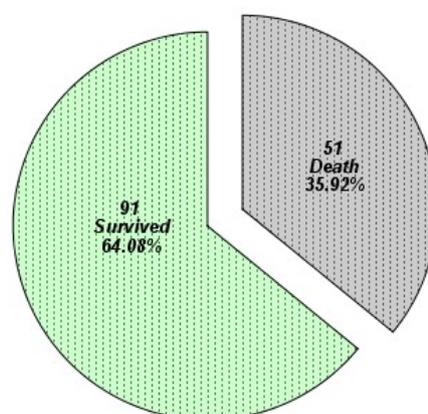


Figure 1: Frequency of mortality in patients with UGIB

Table 2: Distribution of mortality with respect to different AIMS score

AMIS65	Outcome		Total
	Death	Survive	
2-score	1(4.3%)	22(95.7%)	23
3-Score	7(20.6%)	27(79.4%)	34
4-Score	38(49.4%)	39(50.6%)	77
5-Score	5(62.5%)	3(37.5%)	8
Chi-Square= 21.92 p=0.0005			

TABLE 3: Comparison of mortality in different effect modifiers

	Outcome		Total	P-Value
	Death n=51	Survive n=91		
Age ≤ 50 Years	28(37.3%)	47(62.7%)	75	0.71
Age >50 Years	23(34.3%)	44(65.7%)	67	
Female	25(34.7%)	47(65.3%)	72	0.76
Male	26(37.1%)	44(62.9%)	70	
Diabetics	31(40.3%)	46(59.7%)	77	0.24
Non-Diabetics	20(30.8%)	45(69.2%)	65	
Hypertensive	25(29.8%)	59(70.2%)	84	0.06
Non-Hypertensive	26(44.8%)	32(55.2%)	58	
Smokers	10(30.3%)	23(69.7%)	33	0.44
Non-smokers	41(37.6%)	68(62.4%)	109	
Obese	20(44.4%)	25(55.6%)	45	0.14
Non-obese	31(32%)	66(68%)	97	
CVD	18(46.2%)	21(53.8%)	39	0.11
Non-CVD	33(32%)	70(68%)	103	

DISCUSSION

There is an increasing role for evidence-based medicine in clinical practice. This is accompanied by the development of prediction scores and their use is increasingly being recommended and adopted in clinical guidelines [13]. A prediction score (or risk score/decision rule) is a tool for physicians based on several predictors – such as patients' history, physical examination, test results, and other disease characteristics – which give estimation on the probability of a likely diagnosis, prognosis, or response to treatment [14].

Such tools can be of added value for the physician in daily clinical practice. UGIB is a common clinical problem and accounts

for 25–35 hospitalizations per 100,000 person-years [15, 16]. The severity of the disease may vary from no active bleeding to rapid exsanguinations, and yet the course remains difficult to predict. Almost all patients suspected for UGIB are therefore admitted to the hospital and endoscopy is being performed within 24 hours after hospitalization [17]. This results in a high pressure on hospital capacity, possibly unnecessary discomfort for the patient and high healthcare costs. Accurate predicting of the course and outcome of UGIB should ideally facilitate triage into low- and high-risk groups and would thus help clinical management.

Several prediction scores for UGIB have been developed [18]. A new risk

stratification score for patients with GI bleeding was derived and validated that contains 5 elements: albumin less than 3.0 g/dl, international normalized ratio greater than 1.5, altered mental status, systolic blood pressure 90 mm Hg or lower, and age older than 65 years (AIMS 65). The AIMS65 score only includes variables in the risk score that are easily obtained as part of the initial evaluation when patients are in the emergency department, making it applicable as an early risk stratification tool. The predictive accuracy of AIMS65 score for mortality in our study was high and comparable to that of the validation cohort in the study by Saltzman *et al.*, [19]. Saltzman *et al* reported that the patients in the validation cohort with no risk factors had a low mortality rate (0.3%) and those with all 5 risk factors had a high mortality rate (24.5%) [19]. Their results were in concordance to that of ours. In a comparative study between AIMS65 score and GBS, Hyet *et al* (n=278) found that the AIMS65 score was superior in predicting inpatient mortality from UGIB and the latter was superior for predicting blood transfusion [20]. But both scores were similar in predicting the composite clinical endpoint (inpatient mortality, rebleeding, and endoscopic, radiologic or surgical intervention), intensive care unit admission, rebleeding, length of stay and timing of endoscopy. Chandra *et al* reported that the

AIMS65 score accurately predicted 30- and 90-day all-cause mortality among patients with UGIB [21]. Except the study by Jung *et al*, all other studies including that of ours showed that AIMS65 has high predictive accuracy for mortality.

From previous studies we have learned that scores are more likely to be implemented if they are easy to use, if recommendations are being made based on the score (instead of just assessment), if they can be incorporated in the normal daily usual workflow, and if they are computerized [22]. However, the willingness of a physician to use scores is also important. The reasons for a physician not using scores may be: they are difficult to calculate, they take time, and, most importantly, they do not add to their own clinical knowledge. Moreover, it has been reported that clinical decision making may be even better than prediction scores in predicting whether patients with UGIB should be admitted to the intensive care unit [23].

CONCLUSION

There is a need for easily applied, validated risk stratification scores for patients with UGIB to improve patient outcomes. We observed that AIMS65 is a simple, accurate, non-endoscopic risk score that can be applied in patients with acute UGIB. This score can be applied successfully as early as 12 hours of hospital admission and

therefore can assist early decision making and triaging. AIMS65 score ≥ 2 predicts high in-hospital mortality, need for blood transfusion and ICU admission and increased duration of hospital and ICU stay.

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