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Assessment of Severity Level of Gastrointestinal Bleeding Patients with Associated Cardiology Disease with Different Scales

Namazova K. N. (Corresponding Author)
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-reanimation Department, Baku, Azerbaijan
MediClub Hospital, Reanimation-Intensive Therapy Department, Baku, Azerbaijan
Email: nkamala@mail.ru

Hasanov F. C.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-reanimation Department, Baku, Azerbaijan

Samedov E. N.
Scientific Surgery Center named after Academician M. Topchubashov,general surgeon , Baku, Azerbaijan

Aslanov A. A.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-ICU, Baku, Azerbaijan

Muradov N. F.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-ICU, Baku, Azerbaijan

Aliyeva A. M.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-ICU, Baku, Azerbaijan

Musayeva N. Z.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-ICU, Baku, Azerbaijan

Abbasova M. T.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-ICU, Baku, Azerbaijan

Guliyev R. I.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-ICU, Baku, Azerbaijan

Mamedova G.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-ICU, Baku, Azerbaijan

Askerova G. A.
Scientific Surgery Center named after Academician M. Topchubashov, Anesthesiology-ICU, Baku, Azerbaijan

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Abstract

The purpose of this study is to select and compare a range of rating scales to assess the clinical status of high-risk patients with gastrointestinal bleeding (GIB). It was based on the evaluation of the severity of the disease by applying different integral scales in patients with heart disease and developing acute GIB. We evaluated the condition of the patients with Forest (F), Rockall and Glasgow-Blatkford integral scales. We achieved endoscopic homeostasis in 11.81% of patients. We managed to cure 69.15% of patients with conservative treatment and 19.04% with surgical treatment. According to the results of the Rockall scale, 23.63% of high-risk patients and 31.73% of higher-risk patients (total 55.36%) were. However, 19.04% of patients with a severity score above 6 required surgery. Based on these results, we believe that in patients with heart disease and GIB, the severity of the patient's condition and the Glasgow-Blatkford integral scale are more appropriate in choosing the treatment protocol to be selected.

Keywords: Gastrointestinal bleeding; Peptic ulcer; İntegrated systems; Forrest; Blathcford; Rockall.

1. Introduction

Gastrointestinal bleeding (GIB) is a common medical problem and one of the common causes of hospitalization [1]. GIB occurs primarily as a result of damage to the mucosa of the gastrointestinal tract [2, 3]. Aggressive antithrombotic therapy in patients with acute cardiovascular disease such as acute coronary syndrome, heart failure, and pulmonary embolism may be aggravated by GIB. In addition, GIB may increase mortality in critically ill patients with risk factors [4]. Determining the severity of the patient's condition is closely related to the degree of blood loss [5]. If urgent surgical intervention is necessary in patients with a high risk of recurrence of ulcerative GIB, special care should be taken to correctly determine the severity of the patient's condition [6].

In the intensive care unit of the Academician M. Topchubashov Scientific Surgery Center, where we operate, we often come across patients with heart disease and GIB. Most of these patients have a history of long-term use of antiaggregant and anticoagulant drugs. In these patients, it is important to diagnose two pathologies that are the opposite of each other and to choose the right treatment method. Since most of these patients have acute coronary syndrome, acute heart failure, profound hemodynamic and homeostasis disorders, the selection of treatment tactics for these patients remains a problem. In the case of gastrointestinal bleeding, EFGDS should be performed for diagnostic purposes, but since the application of the endoscopic method in patients with heart pathology is difficult and risky, we aimed to apply integral scales in patients.

For a more objective assessment of the condition of patients with chronic ischemic heart disease and ICU in the intensive care unit, the choice of various integral scales remains relevant, and a number of scientists have recently considered it necessary to use these scales.

The co-authors were allowed to write articles based on case histories and laboratory tests while maintaining the anonymity of the patients. We are aware of the decision of the Ministry of Health of the Republic of Azerbaijan on the Rules for the Ethical Conduct of Doctors by order No. 137 of 12/29/2011.

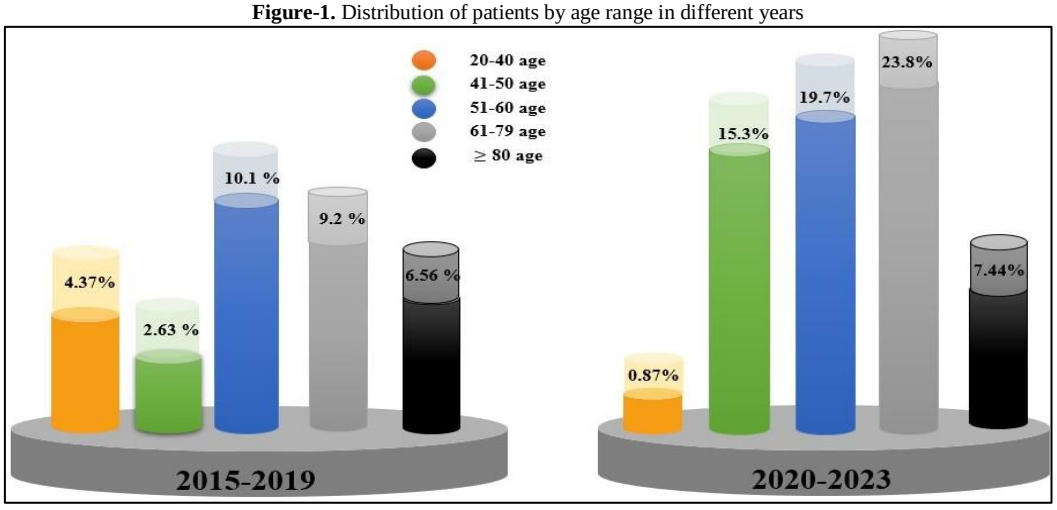
2. Purpose

Acute GIB with heart disease involves assessing the severity of the disease by applying various integral scales in advanced patients.

3. Material and Methods

We did not observe high values of cardiac markers and changes in central hemodynamic parameters in patients with acute GIB and their correlation, which led to the decision to conduct the study. Clinical materials of 457 patients diagnosed with GIB were analyzed. History of 215 (47.04%) patients from 2015 to 2019; From 2020 to 2023 Clinical materials of 242 (52.96%) patients were retrospectively analyzed. Cardiac pathology was detected in 150 (32.82%) patients. 306 patients (66.95%) were men, 151 patients (33.05%) were women. Patients were grouped by age and are shown in Figure 1.

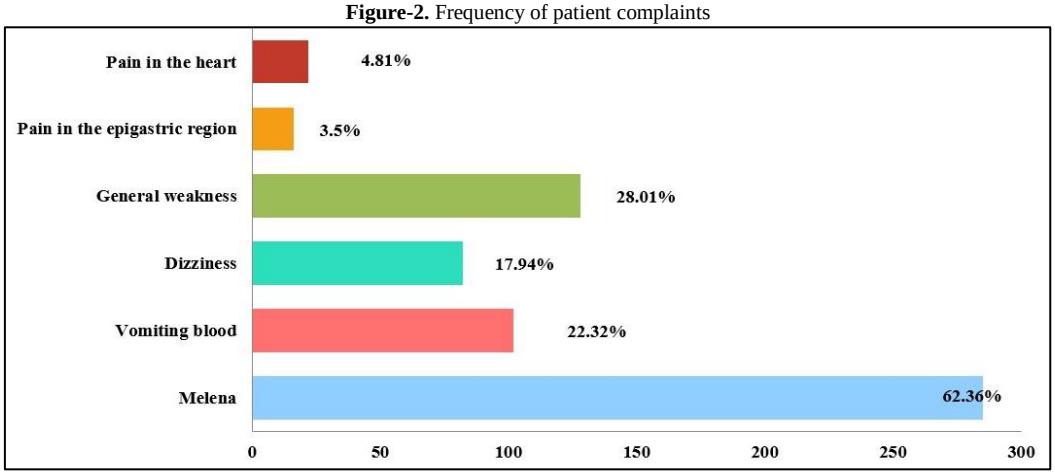
Figure-1. Distribution of patients by age range in different years



24 patients aged 20 to 40 years; 82 people aged 41-50 years; 136 people aged 51-60 years; 151 people aged 61-79 years; in total there were 64 people >80 years old. Of these, 14 patients aged 20 to 40 years took steroidal and non-steroidal drugs orally due to a history of rheumatoid arthritis and bronchial asthma. Of the 457 patients, only 210 patients (45.95%) underwent EChO; the heart rate fraction was 41.13±9.66%. In 28 (13.33%) patients who underwent EChO, hypokinesia of the posterior wall of the myocardium was noted, in 14 (6.66%) there were areas of akinesia, in 4 (1.91%) there was tricuspid insufficiency (SPAP-46 mm Hg).

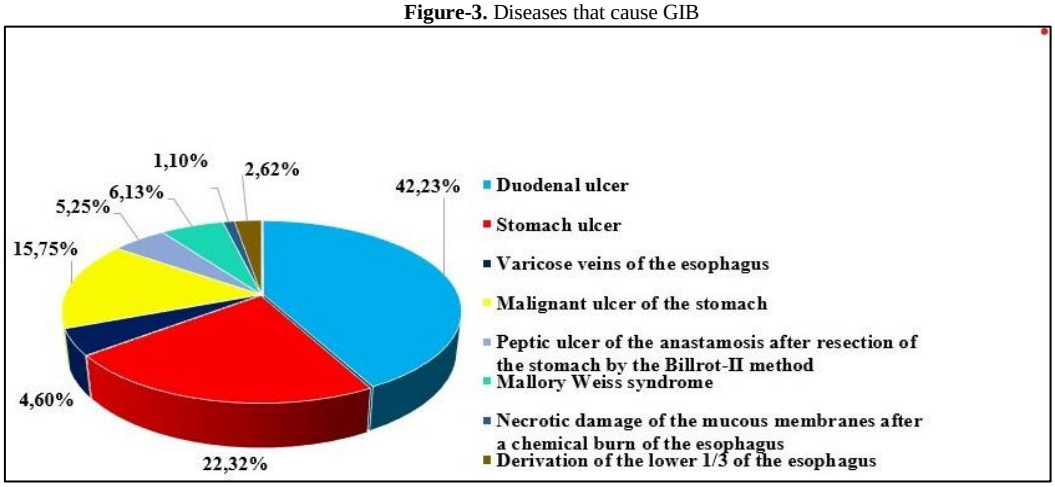
Patients with GIB came to the hospital with various complaints. Patients complained of melena, bloody vomiting, epigastric and cardiac pain, general weakness, and the frequency of symptoms is shown in Figure 2.

Figure-2. Frequency of patient complaints



Of the 457 patients examined, 42.23% had duodenal ulcer; gastric ulcer in 22.32%; varicose veins of the esophagus in 4.6%; 15.75% had a malignant gastric ulcer; peptic ulcer of the anastomosis after gastric resection using the Billroth II method - in 5.25%; Mallory-Weiss syndrome – in 6.13%; In 1.1%, necrotic damage to the mucous membranes after a chemical burn of the esophagus, and in 2.62%, a rupture of the lower third of the esophagus caused GIB, as shown in Figure 3.

Figure-3. Diseases that cause GIB



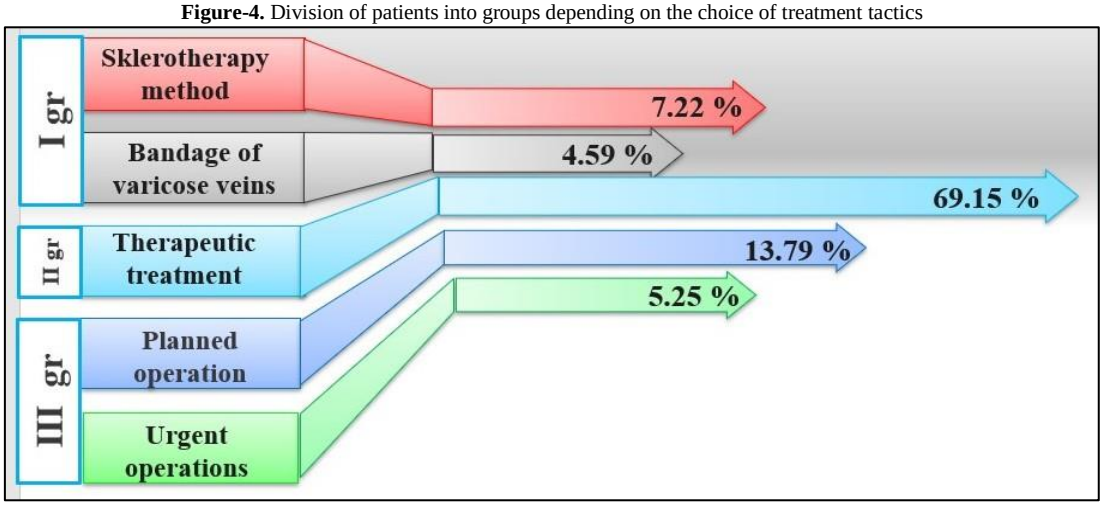
Of the 457 patients, 194 (42.45%) had a history of medication use. Thus, antiplatelet agents were used by 180 people (39.38%), steroids-8 people (1.75%), non-steroidal drugs-6 people (1.31%). In addition, 292 patients (63.89%) had concomitant diseases (Table 1). Of the 292 patients, only 150 (51.37%) had heart defects.

Table-1. Co-occurring heart diseases in study group patients

Pathologies	n	%
Acute coronary syndrome, myocardial infarction	27	18
CİHD, Postinfarction cardiosclerosis, Heart failure	42	28
Condition after Aortic Coronary Bypass	24	16
Angioplastics of coronary arteries	26	17.33
Atrial fibrillation	29	19.33
Patients with pacemaker devices	2	1.34
Total	150	100

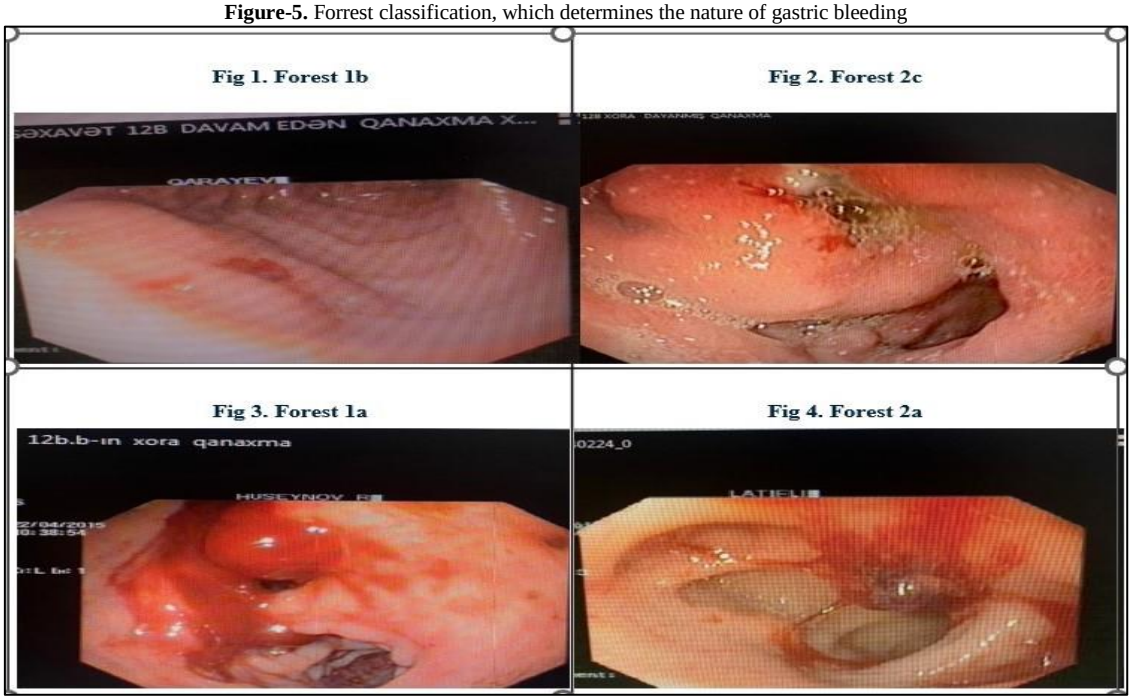
Of the patients, 369 (80.74%) patients were diagnosed with EFGDS immediately upon admission to the hospital, and 88 (19.26%) patients received appropriate therapeutic treatment. The acidity of the stomach was also studied and it was PH-6.11±0.81. Depending on the choice of treatment tactics, patients were divided into 3 groups (Fig. 4). In group I, sclerotherapy was applied endoscopically to the vessels from the ulcer, and a bandage was applied to the varicose veins. In group II, by choosing intensive therapy tactics, it was possible to stop GIB and obtain a positive result. In group III, planned and emergency surgical tactics were chosen.

Figure-4. Division of patients into groups depending on the choice of treatment tactics



In case of stopping bleeding from the gastrointestinal tract using the endoscopic method and when choosing treatment tactics, it is considered advisable to use J. Forrest's classification to describe the condition of the stomach and determine the nature of bleeding (F1a - reactive bleeding from a wound; F1b - drip bleeding from a wound; F2a - thrombosed vessels under the ulcer; F2b - blood clot covering the ulcer; F2c - ulcer without signs of bleeding; F3 - source of bleeding not detected) [7].

Figure-5. Forrest classification, which determines the nature of gastric bleeding



F1b (1) was detected in 54 patients (11.81%), homeostasis was achieved using sclerotherapy in 33 patients using the endoscopic method; In 21 patients, a ligature was applied to bleeding varicose veins. Considering the presence of F2c (2) and concomitant diseases in 316 patients, the patients were cured with conservative treatment. 87 patients (19.04%) were operated on. Since 24 patients had F1a (3), this was urgent; Because 63 individuals had F2a (4), elective surgery was used (Fig. 5).

In patients with coronary heart disease who have developed GIB, it is considered more appropriate to choose different informative diagnostic scales, taking into account concomitant diseases. Thus, the most informative is the Rockall risk scale (RS), which takes into account age, concomitant diseases, shock and the results of endoscopic examination [8]. If the RS calculated after endoscopy is below 3, the risk of rebleeding and death is considered low, and the patient is recommended to be referred to outpatient treatment as soon as possible; If above 3, hospitalization and follow-up are necessary; A score of 8 or higher indicates a high risk of rebleeding (Table 2).

Table-2. Rockall risk scale

Age	**points**
<60	**0**
60-79	1
≥80	2
Shock data	
Systolic arterial pressure >100 mmHg, Ps <100/dəq	0
Systolic arterial pressure >100 mmHg, Ps >100/dəq	1
Systolic arterial pressure >100 mmHg	2
Associated diseases	
There is no	0
Coronary heart failure or ischemic heart disease	1
Kidney or liver failure	2
Metastatic malignancy	3
Endoscopic result	
No Mallory-Weiss syndrome or lesions	0
All other results	1
Malignancy of the upper gastrointestinal system	2
Possible bleeding in the near future	
Absent or red rash	0
Blood in the upper gastrointestinal tract, sticky stool, visible vein	2
*Patients with a score of 0-2 are in the low-risk group, patients with a score of 3-4 are in the moderate-risk group, and patients with a score of ≥5 are in the high-risk group. ***Rockall TA, Logan RF, Devlin HB, Northfield TC. Risk assessment after acute upper gastrointestinal haemorrhage. Gut. 1996;38(3):316-21.***	

In patients with ulcerative bleeding, measures such as emergency EFGDS, blood transfusion, determination of the need for intervention to stop bleeding, and the need for hospitalization were calculated using the Glasgow-Blatchford scale (GBS) (Table 3). In the GBS system, a combination of clinical and laboratory data has a higher prognostic value. The GBS system takes into account blood pressure, pulse rate, the presence of melena, fainting, the presence of concomitant pathologies of the liver and heart, laboratory data: it differs from the RS in the use of clinical indicators such as hemoglobin and urea concentrations.

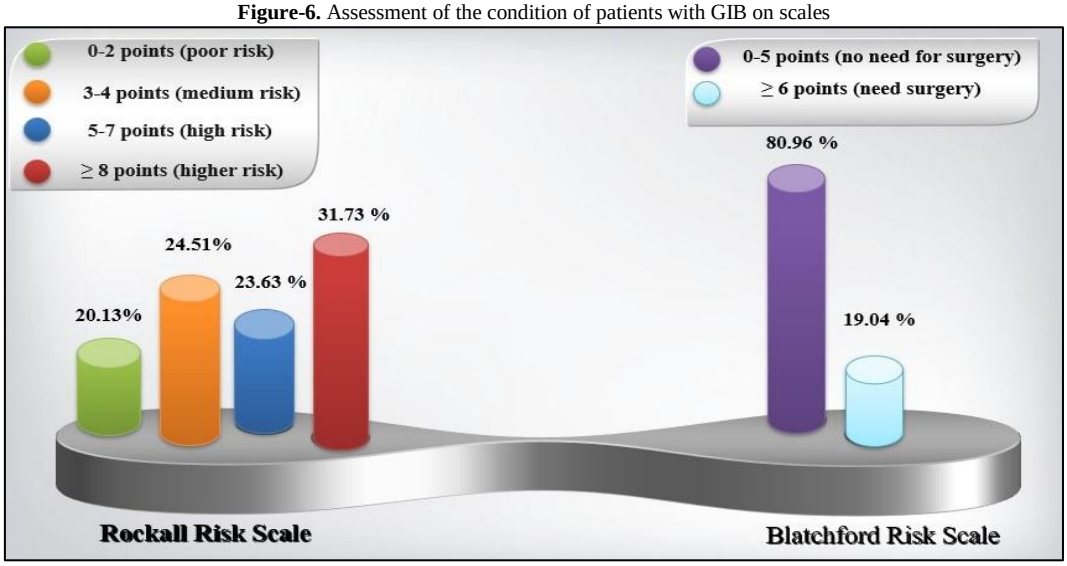
It has certain advantages over the RS, which assesses the risk of death with the GIB. Sometimes it is not possible to perform EFGDS in patients with concomitant diseases. Currently, it is considered more appropriate to assess the patient's condition using the GBS in patients with coronary artery disease along with GIB. A score of 6 or higher on this scale is considered an indication for surgery in 50% of these patients. Based on the clinical and endoscopic parameters, the RS (Table 2) and GBS (Table 3) systems also predict the probability of mortality in the upper GIB based on the bleeding score.

Table-3. Glasgow-Blatchford scale

A. Urea level (mg/dL) **B. Age**		**points**	**A. Systolic arterial pressure (mmHg)**	**points**
>70		6	<90	3
28-70		4	90-99	2
23-27		3	100-109	1
18-22		2	≥110	0
<18		0		
C. Hemoglobin (g/dL)			**D. Other markers**	
man	woman		Heart failure	2
<10.0	<10.0	6	Liver disease	2
10.0-11.9	-	3	Syncopal state	2
12.0-12.9	10.0-11.9	1	Melena is remarkable	1
≥13.0	≥12.0	0	Ps ≥100/dəq	1
Blatchford O, Murray WR, Blatchford M. A risk score to predict need for treatment for upper-gastrointestinal haemorrhage. Lancet. 2000; 356 (9238): 1318-21.				

When assessing the condition of patients with GIB, it was found that 23.63% of patients were in the high-risk group and 31.73% of patients were in the high-risk group according to the RS. According to the GBS, indications for surgery were available in 19.04% of patients, which is shown in Figure 6.

Figure-6. Assessment of the condition of patients with GIB on scales



4. Result

Based on the results of the study, it is known that although endoscopic examination (Forrest, Rockall scale) is considered the main classical method for diagnosing bleeding from the upper gastrointestinal tract, the use of GBS scales in the Diagnostic assessment of GIB in patients with coronary heart disease and choosing the right one treatments have great prognostic significance. In our study, 11 (2.4%) of 457 patients treated in ICU between 2015 and 2023 experienced death. The cause of death was respiratory failure due to myasthenia gravis in 1 patient, hepatitis C, acute hepatic renal failure in 2 patients; 8 patients developed acute coronary syndrome, acute heart failure developed due to cardiogenic shock. All three patients had a high Rockall risk score of 8; It was >6 points on the Blatchford risk scale. Among patients with mortality, it was possible to conduct EFGDS in patients with myasthenia gravis and hepatitis. Since 8 patients had acute coronary syndrome and heart failure, we considered it appropriate to evaluate the condition using the Blatchford scale.

Thus, when assessing the condition of patients using integral scales, it was found that F1b was detected in 11.81% of patients, therefore endoscopic hemostasis was used in 7.22% of patients; 4.59% of bleeding varicose veins were ligated. Taking into account the presence of F2c and concomitant diseases, 69.15% of patients were cured with conservative treatment. 19.04% of patients were operated on. Urgent like F1a at 5.25%; 13.79% had F2a and underwent elective surgery.

23.63% of patients are high risk according to RS, 31.73% of patients are high risk. According to the Rockall scale, patients with a score above 6 should be operated on due to the high risk of bleeding. According to the results of our study, the high and highest risk group was only -55.36%. However, 19.04% of patients with a score 6 points higher on the Blatchford scale require surgery. Unlike RS, when assessing GBS there is no need for the results of an endoscopic examination. Based on the results obtained, we consider it more appropriate to assess the condition of patients with advanced ischemic heart disease using the Blatford integral scale.

5. Discussion

In patients with GIB, it is important to use integral scales to assess the severity of bleeding, monitor patients and choose treatment tactics. According to Laursen, *et al.* [9] and co-authors, by applying the Rockall Integral scale, patients younger than 60 years old, with stable hemodynamic parameters, no serious comorbidities, and no endoscopic high-risk bleeding markers can be treated. None of these patients had rebleeding or repeated clinic visits. According to them, patients with a score of 0 points on the Rockall Integral scale can safely continue their treatment at home [9].

According to Lapina N and co-authors, of these scales, the Glasgow-Blatchford scale is more appropriate, and the risk of death was higher among patients who scored 5 points. When studying the patients who died, it was found that initially hemodynamic indicators were unstable in these patients [10].

Lingjie He and Abbas A proved once again in their scientific research that since the mortality % is higher in patients with myocardial infarction along with GIB, it is possible to choose the correct treatment tactics by evaluating their condition with the above scales without applying endoscopic hemostasis to these patients [11, 12].

Since bleeding from the upper departments of the gastrointestinal tract is most common in the elderly, and most of these patients cannot be EFGDS, he created the Rockall Integral scale for the first time in Scotland and proved that the scale is of great importance in medicine, and after the application of the scales, the standardized mortality rate was significantly reduced compared to previous studies [13].

Although Blatchford associated the cause of death during gastrointestinal bleeding with the spread of Helicobacter pylori, comorbidities, age, gender, hypotension, steroid and non-steroid drugs, the results of his study did not confirm these possibilities at all [14, 15].

Although Rockall proved the diagnostic value of the Integral scale he discovered in his research, Blathford, unlike him, did not confirm the diagnostic value of the Integral scale he discovered in his research, but he, along

with many scientists, supports the Blathford scale in the diagnosis of patients with GIB with heart disease and we also agree with this decision.

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