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Study to Assess the Varieties of Gastrointestinal Bleeding in Patients with Coronary Heart Diseases, Attending a Tertiary Care Center, Agra, North India

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Abstract

The aim of the present study is to assess the varieties of gastrointestinal bleeding in patients with coronary heart disease. Current study involved the examination of 100 individuals with coronary heart disease. Patients with coronary heart disease received conventional therapy, including heparin (bolus, then infusion and subcutaneous injection), aspirin and clopidogrel (loading doses, followed by the transition to maintenance). Among 100 patients, 7% had acute myocardial infarction (MI), 45% had progressive strenuous angina (PNS) and 48% had strenuous angina (NS, functional class III-IV). The mean age of the patients was 57.4±2.8 years. In the trial of antiplatelet and anticoagulant treatment, 46% of patients received clopidogrel and aspirin, 18% received one medicines and 36% received both. According to data from 36% of patients, GB problems rely on treatment T echniques. Thus, GB was more common in those using clopidogrel and aspirin together, but about equally common in those taking either monoterpia or both with anticoagulant and antiplatelet medication. The research of faecal occult blood test patients found 18% positive and 82% negative. The study found that 48% of coronary heart disease patients have single ulcers and 52% have numerous ulcers, mostly in men. In patients with coronary heart disease complicated by gastrointestinal bleeding, the prognosis is worse because coronary reserve decreasess and anaemia, inevitable violations of homeostasis and homeokinesis of Central haemodynamics, kidney nitrogen release function violation, and serum creatinine increase exacerbate the consequences of coronary catastrophe.

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Key Words

Ischemic heart disease, nsaid-gastropathy, gastrointestinal bleeding

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INTRODUCTION

Percutaneous coronary intervention (PCI) is the established therapy for the blockage of coronary arteries in individuals experiencing acute coronary syndrome (ACS). The following dual antiplatelet treatment (DAPT) involves the use of both aspirin and P2Y12 inhibitors in order to decrease the occurrence of ischaemic problems during the perioperative period [1-3]. Nevertheless, this might elevate the likelihood of bleeding and is directly correlated with the length of DAPT therapy[2]. Studies have demonstrated a correlation between significant bleeding during percutaneous coronary intervention (PCI) and higher fatality rates[5-6].

The 2017 ESC and 2016 ACC/AHA guidelines both suggest using bleeding scoring tools[7-8], such as DAPT [9], to predict bleeding complications in patients who have undergone stent implantation and are receiving dual antiplatelet therapy (PRECISE-DAPT)[10]. Additionally, the guidelines recommend using risk scores like CRUSADE to guide antithrombotic therapy in unstable angina patients, with the goal of reducing adverse outcomes through early implementation of the ACC/AHA guidelines[11]. The DAPT scoring system has the ability to differentiate between individuals who have a high risk of bleeding or a high risk of ischaemia. Its primary purpose is to assess the potential extension of dual antiplatelet medication after PCI, while minimising the risk of bleeding. However, its usefulness in evaluating risk within the first year following the procedure is restricted in real-world scenarios[12].

The current standard of treatment following drug-eluting stent (DES)[13] placement is to continue dual antiplatelet therapy (DAPT) for a length of 12 months. However, there has been no comprehensive assessment of the timing, predictors and prognostic consequences of gastrointestinal bleeding (GIB) occurring late after percutaneous coronary intervention (PCI) with DES. Furthermore, while prasugrel and ticagrelor have been linked to a higher likelihood of gastrointestinal bleeding (GIB) in controlled trials[14-15] their safety record in a broader population of patients is not yet fully understood. However, the specific incidence and clinical effect of upper gastrointestinal bleeding (GIB) compared to lower GIB following percutaneous coronary intervention (PCI) are still not well understood, despite the differences in causes and prognostic relevance of bleeding in these two areas of the gastrointestinal tract in the general population.

The objective of this study was to evaluate the different types of gastrointestinal bleeding in individuals diagnosed with coronary heart disease.

MATERIALS AND METHODS

Hospital based observational study conducted at S.N. Medical College and Hospital in the year 2022-2023 (1 year). We selected 100 patients who are suffering with coronary heart disease, among them patients with acute myocardial infarction (MI) were 7 (7%), with progressive strenuous angina (PNS)-45 (45%), strenuous angina (NS, functional class III-IV)-47 (48%) people. The average age of patients was 57.4±2.8 years.

All patients with clinically established coronary artery disease along with conventional clinical, laboratory and instrumental studies like Fibro esophagogastroduodenos copy-fecal occult blood. Patients with coronary heart disease received conventional therapy, including heparin (bolus, then infusion and subcutaneous injection), aspirin and clopidogrel (loading doses, followed by the transition to maintenance).

The data was spread over excel sheet and the data was expressed in percentages and represented in tabular form. Statistical analysis was performed using SPSS version 22.

RESULTS AND DISCUSSIONS

Table 1: The Nature of Antiplatelet and/or Anticoagulant Therapy in Patients with CVD (abs)

Combined therapy	Number of patients
Therapy 1 antiplatelet agents (clopidogrel or aspirin)	18 (18%)
Combination therapy with 2 antiplatelet agents (clopidogrel+aspirin)	46 (46%)
Combination therapy 3rd (1 anticoagulant + 2 antiplatelet)	36 (36%)
Total	100 (100%)

In the study of antiplatelet and anticoagulant therapy, it was found that 46% of patients received clopidogrel and aspirin, 18%-one of the drugs (clopidogrel or aspirin) 36%-anticoagulant and antiplatelet therapy (heparin, kleksan or, warfarin).

Table 2: Complications (GB) of Anticoagulant Therapy in Patients with CHD (abs)

Combined therapy	Number of patients	Number of patients with complications (GB)
Monotherapy therapy 1st antiplatelet agents (clopidogrel or aspirin)	18 (18%)	6
Combination therapy with 2 antiplatelet agents (clopidogrel+aspirin)	46 (46%)	24
Combination therapy 3rd (1 anticoagulant +2 antiplatelet)	36 (36%)	6
Total	100 (100%)	36

According to the data obtained in 36% of patients complications in the form of GB, considered in terms of their dependence on the methods of treatment. Thus, the frequency of GB was significantly revealed in patients receiving a combined regimen of clopidogrel

and aspirin, almost equally GB was found in patients taking clopidogrel or aspirin monoterpia, as well as anticoagulant and antiplatelet therapy.

Table 3: The Results of the Analysis of the Fecal Occult Blood Test (abs)

The fecal occult blood test	Quantity
Positive	18 (18%)
Negative	82 (82%)
Total	100 (100%)

According to the data obtained for the study of patients with fecal occult blood test 18% of patients showed a positive result and 82%-negative.

Table 4: Characteristics of Ulcers of the Stomach and Duodenum in Patients Studied (abs)

Number of ulcers	Male	Female	Total
Single	35	13	48
Multiple	50	2	52
Total ulcers	85 (85%)	15(15%)	100 (100%)

The results of the study showed that single ulcers occur in 48% of patients with coronary heart disease and multiple-52%, with a pronounced frequency in males.

Table 5: Endoscopic Location of the Ulcerative Process in the Gastrointestinal Tract (abs)

The localization of ulcers of the stomach and duodenum	Number of ulcers
Cardiac part	12 (6%)
Antral part	94 (47%)
The pyloric part	48 (24%)
DPK	46 (23%)
Total ulcers	200 (100%)

When considering the localization of the ulcerative process in the examined patients with coronary heart disease, the highest frequency was detected in the antral (47%) and pyloric (24%) part of the stomach and in the WPC (23%).

Table 6: Endoscopic location of Ulcers Depending on the Gender of Patients with CHD (abs)

The localization of ulcers complicated with bleeding	Male	Female	Total
Cardiac part	7	5	12 (6%)
Antral part	70	24	94 (47%)
The pyloric part	40	8	48 (24%)
DPK	36	10	46 (23%)
Total ulcer	153	47	200 (100%)

The majority GB was in the antral part. Also, a significant amount of GB was detected from DPK ulcer again in a greater degree in men than in women. The relative frequency of bleeding ulcers was also found in the pyloric section of the stomach with a high degree in men than in women.

Table 7: Complications of Peptic Ulcer Disease of Stomach and Duodenum Depending on the Gender of Patients with CHD (abs)

Ulcer of the stomach and duodenum Localization	Uncomplicated Male	Uncomplicated Female	Complicated Male	Complicated Female	Total
Cardiac part	8	2	1	1	12 (6%)
Antral part	42	15	25	12	94 (47%)
The pyloric part	32	6	8	2	48 (24%)
DPK	8	7	26	5	46 (23%)
Total ulcer	90	30	60	20	200 (100%)

The presented analysis revealed complications of peptic ulcer disease establishes the presence of 200 (100%) different ulcers in examined patients with coronary heart disease.

The introduction of powerful antiplatelet and antithrombotic drugs has significantly enhanced the outcomes of ischaemic events in patients with coronary artery disease who are having percutaneous coronary interventions (PCIs)[13-14]. Nevertheless, bleeding has emerged as a significant worry because to its high occurrence as a noncardiac complication following PCI, with a negative impact on prognosis that is equivalent to that of ischaemic events[15-19]. Gastrointestinal bleeding (GIB) is a frequent cause of bleeding that occurs outside the access site following PCI7. It has been linked to a mortality rate of up to 10% during hospitalization[20].

In the investigation of antiplatelet and anticoagulant treatment, it was shown that 46% of patients were administered both clopidogrel and aspirin, 18% got either clopidogrel or aspirin and 36% had anticoagulant and antiplatelet therapy with heparin, kleksan, or warfarin. The data shows that 36% of patients experienced problems in the form of GB and these issues were shown to be dependent on the techniques of therapy. Therefore, the occurrence rate of GB was notably seen in patients who were administered a combination of clopidogrel and aspirin. Similarly, GB was also observed in patients who were taking either clopidogrel or aspirin alone, as well as those undergoing anticoagulant and antiplatelet medication. The issue of gallbladder (GB) in individuals with coronary heart disease (CHD) is particularly significant. The intricate set of metabolic alterations that occur in coronary heart disease (CHD) and result in ongoing inadequate blood supply to the heart muscle might potentially lead to the emergence of sudden gastric and duodenal ulcers. It is well-established that around 30% of myocardial infarction cases are followed by the development of gastroduodenal "stress" damage to the mucous membranes, known as Selye syndrome. This condition is clinically important and can lead to a death rate of 50-80%[21-22]. The occurrence of erosive gallbladder disease in individuals with coronary heart disease can also be facilitated by the use of antiplatelet or anticoagulant medications. For instance, taking regular doses of aspirin increases the risk of gallbladder disease by 1.8 times, while clopidogrel increases it by 1.1 times. The combination of both drugs raises the risk by 7.4 times[23].

Based on the collected data from the study on patients undergoing faecal occult blood tests, it was found that 18% of the patients tested positive, while 82% tested negative. The study findings revealed that 48% of patients with coronary heart disease experience single ulcers, whereas 52% experience numerous ulcers, with

a higher occurrence rate observed in males. When analysing the location of the ulcerative process in the patients with coronary heart disease, the most common occurrence was found in the antral (47%) and pyloric (24%) regions of the stomach, as well as in the WPC (23%). The bulk of the gastrointestinal bleeding (GB) occurred in the antral region. Furthermore, a substantial quantity of GB was seen in the DPK ulcer once again, with a higher prevalence in males compared to females. The prevalence of bleeding ulcers was also seen in the pyloric region of the stomach, with a higher incidence in males compared to women. The research conducted demonstrated that all of the tested individuals with coronary heart disease had 200 distinct ulcers, indicating the existence of problems related to peptic ulcer disease. Timely identification of high-risk patients with gastrointestinal bleeding (GIB) was beneficial for prompt monitoring and implementation of preventative therapy, hence reducing the occurrence and death rate. Currently, several cardiology-related clinical bleeding risk score systems have been nearly constructed for a specific condition in various populations. HAS-BLED is a straightforward and effective scoring system used to predict significant bleeding events (such as gastrointestinal bleeding, a fall in haemoglobin levels of more than 2 g/L, or the need for a blood transfusion) in patients with atrial fibrillation (AF), especially in situations of gastrointestinal bleeding where no antithrombotic medications are used or only a single antiplatelet treatment is administered[24].

Specifically, Robertson[25] discovered that the AIMS65 bleeding score had a strong capacity to forecast mortality in cases of upper gastrointestinal bleeding (AUROC: 0.84). Nevertheless, due to the restricted sample size in our investigation, further data is required to validate the prognostic significance of the novel risk score model on mortality. Furthermore, the international consensus group recommends using the Glasgow Blatchford score to identify patients who are at a very low risk of experiencing rebleeding. These patients may not need to be hospitalised. Additionally, for patients without cardiovascular disease, it is suggested that the haemoglobin threshold for blood transfusion be set at less than 80 g/L. However, for patients with cardiovascular disease, a higher threshold is recommended[26].

Daniel[27] discovered that the dual antiplatelet (DAPT) score is valuable in patients with acute myocardial infarction (AMI) and a threshold of 2 can identify individuals with a reduced risk of bleeding who may gain from extended DAPT treatment. It is important to highlight that the risk of gastrointestinal bleeding (GIB) is not fixed and can fluctuate throughout the course of a hospital stay. It is not simply a one-time evaluation. Hence, it is important to consistently evaluate modifiable risk factors for gastrointestinal bleeding. Tze-Fan[28] discovered that the risk of bleeding in patients with AF is a constantly changing process. They suggest using the HAS-BLED score to identify patients who may be at risk for closer monitoring and follow-up. This will allow healthcare professionals to address and modify any bleeding risk factors during subsequent visits. The implementation of dynamic risk monitoring using the HAS-BLED score focused on identifying and addressing modifiable bleeding risks. This approach resulted in a higher adoption of oral anticoagulant medication at the 12-month mark. This increased uptake of medication has been linked to improved clinical outcomes without an accompanying rise in gastrointestinal bleeding[29]. Peritoneal dialysis (PD) is associated with a lower risk of gastrointestinal bleeding compared to hemodialysis (HD), particularly in patients requiring anticoagulation. These findings support the consideration of PD as a safer dialysis modality in terms of GI bleeding risk, aiding individualized patient care decisions[30-31].

CONCLUSION

The prognosis for patients with coronary heart disease complicated by gastrointestinal bleeding is worse due to decreased coronary reserve and exacerbated problems related to coronary catastrophe. These issues are further aggravated by anaemia, disruptions in the regulation of homeostasis and homeokinesis of central haemodynamics and impaired kidney function in releasing nitrogen, resulting in increased serum creatinine levels.

REFERENCES

1. Wallentin, L., R.C. Becker, A. Budaj, C.P. Cannon and H. Emanuelsson, *et al*., 2009. Ticagrelor versus clopidogrel in patients with acute coronary syndromes. Engl. J. Med., 361: 1045-1057.
2. Wiviott, S.D., E. Braunwald, C.H. McCabe, G. Montalescot and W. Ruzyllo, *et al*., 2007. Prasugrel versus clopidogrel in patients with acute coronary syndromes. Engl. J. Med., 357: 2001-2015.
3. Clopidogrel in Unstable Angina to Prevent Recurrent Events Trial Investigators. 2001. Effects of clopidogrel in addition to aspirin in patients with acute coronary syndromes without ST-segment elevation. Engl Jour Med., 345: 494-502.
4. Mauri, L., D.J. Kereiakes, R.W. Yeh, P. Driscoll-Shempp and D.E. Cutlip, *et al*., 2014. Twelve or 30 months of dual antiplatelet therapy after drug-eluting stents. New Engl. J. Med., 371: 2155-2166.
5. Palmerini, T., U. Benedetto, L.R. Bacchi, D.D. Riva and G.Z. Biondi, *et al*., 2015. Mortality in patients treated with extended duration dual antiplatelet

therapy after drug-eluting stent implantation: A pairwise and bayesian network meta-analysis of randomised trials. Lancet, 385: 2371-2382.

6. Généreux, P., G. Giustino, B. Witzenbichler, G. Weisz and T.D. Stuckey, *et al*., 2015. Incidence, predictors, and impact of post-discharge bleeding after percutaneous coronary intervention. J. Am. Coll. Cardiol., 66: 1036-1045.
7. Valgimigli, M., H. Bueno, R.A. Byrne, J.P. Collet and F. Costa, *et al*., 2018. ESC focused update on dual antiplatelet therapy in coronary artery disease developed in collaboration with EACTS: The Task Force for dual antiplatelet therapy in coronary artery disease of the European Society of Cardiology (ESC) and of the European Association for CardioThoracic Surgery (EACTS). Euro heart jou., 39: 213-260.
8. Levine, G.N., E.R. Bates, J.A. Bittl, R.G. Brindis and S.D. Fihn, *et al*., 2016. 2016 acc/aha guideline focused update on duration of dual antiplatelet therapy in patients with coronary artery disease: A report of the American college of cardiology/american heart association task force on clinical practice guidelines: An update of the 2011 accf/aha/scai guideline for percutaneous coronary intervention, 2011 accf/aha guideline for coronary artery bypass graft surgery, 2012 acc/aha/acp/aats/pcna/scai/sts guideline for the diagnosis and management of patients with stable ischemic heart disease, 2013 accf/aha guideline for the management of st-elevation myocardial infarction, 2014 aha/acc guideline for the management of patients with non–st-elevation acute coronary syndromes, and 2014 acc/aha guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery. Circulation, 134: 123-155.
9. Yeh, R.W., E.A. Secemsky, D.J. Kereiakes, S.L. Normand and A.H. Gershlick, *et al.,* 2016. Development and validation of a prediction rule for benefit and harm of dual antiplatelet therapy beyond 1 year after percutaneous coronary intervention. Jama, 315: 1735-1749.
10. Costa, F., D. van Klaveren, S. James, D. Heg and L. Räber, *et al*., 2017. Derivation and validation of the predicting bleeding complications in patients undergoing stent implantation and subsequent dual antiplatelet therapy (precise-dapt) score: A pooled analysis of individual-patient datasets from clinical trials. Lancet, 389: 1025-1034.
11. Subherwal, S., R.G. Bach, A.Y. Chen, B.F. Gage and S.V. Rao, *et al*., 2009. Baseline risk of major bleeding in non–st-segment–elevation myocardial infarction. Circulation, 119: 1873-1882.
12. Ueda, P., T. Jernberg, S. James, J. Alfredsson and D. Erlinge, *et al*., 2018. External validation of the dapt score in a nationwide population. J. Am. Coll. Cardiol., 72: 1069-1078.
13. Leon, M.B., D.S. Baim, J.J. Popma, P.C. Gordon and D.E. Cutlip, *et al*., 1998. A clinical trial comparing three antithrombotic-drug regimens after coronary-artery stenting. Engl. J. Med., 339: 1665-1671.
14. Moussa, I., M. Oetgen, G. Roubin, A. Colombo and X. Wang, *et al*., 1999. Effectiveness of clopidogrel and aspirin versus ticlopidine and aspirin in preventing stent thrombosis after coronary stent implantation. Circulation, 99: 2364-2366.
15. Manoukian, S.V., F. Feit, R. Mehran, M.D. Voeltz and R. Ebrahimi, *et al*., 2007. Impact of major bleeding on 30-day mortality and clinical outcomes in patients with acute coronary syndromes. J. Am. Coll. Cardiol., 49: 1362-1368.
16. Eikelboom, J.W., S.R. Mehta, S.S. Anand, C. Xie, K.A.A. Fox and S. Yusuf, 2006. Adverse impact of bleeding on prognosis in patients with acute coronary syndromes. Circulation, 114: 774-782.
17. Manoukian, S.V., 2009. Predictors and impact of bleeding complications in percutaneous coronary intervention, acute coronary syndromes, and st-segment elevation myocardial infarction. Am. J. Cardiol., 104: 9-15.
18. Feit, F., M.D. Voeltz, M.J. Attubato, A.M. Lincoff and D.P. Chew, *et al*., 2007. Predictors and impact of major hemorrhage on mortality following percutaneous coronary intervention from the replace-2 trial. Am. J. Cardiol., 100: 1364-1369.
19. Nikolsky, E., R. Mehran and G.W. Stone, 2009. Gastrointestinal bleeding in percutaneous coronary intervention and acute coronary syndromes. Am. J. Cardiol., 104: 22-29
20. Abbas, A.E., B. Brodie, S. Dixon, D. Marsalese and S. Brewington, *et al*., 2005. Incidence and prognostic impact of gastrointestinal bleeding after percutaneous coronary intervention for acute myocardial infarction. Am. J. Cardiol., 96: 173-176.
21. Lebedev, N.V., A.E. Klimov and A.A. Barkhudarov, 2014. Gastroduodenal ulcerative bleeding. Khirurgiia, 1: 23-27.
22. Chikaev, V.F., Z.F. Kim, I.I. Gumerov, D.M. Petukhov and Y.V. Bondarev, 2013. Gastrointestinal bleeding in patients with coronary heart disease. Bull modclin med., 6: 57-59.
23. Shchegolev, A.A., A.E. Mitichkin, O.A. Sabunchi, S.A. Valetov and A.V. Pavlychev,*et al*., 2016. Drug hemostasis in patients with ulcerative gastroduodenal bleeding: the state of the problem and real prospects. Surgery, 3: 34-39.
24. Pisters, R., D.A. Lane, R. Nieuwlaat, C.B. de Vos,

H.J.G.M. Crijns and G.Y.H. Lip, 2010. A novel user-friendly score (has-bled) to assess 1-year risk of major bleeding in patients with atrial fibrillation. Chest, 138: 1093-1100.

25. Robertson, M., J. Ng, W.A. Shawish, A. Swaine and G. Skardoon et al., 2019. Risk stratification in acute variceal bleeding: Comparison of the aims65 score to established upper gastrointestinal bleeding and liver disease severity risk stratification scoring systems in predicting mortality and rebleeding. Digestive Endoscopy, 32: 761-768.
26. Barkun, A.N., M. Almadi, E.J. Kuipers, L. Laine and J. Sung et al., 2019. Management of nonvariceal upper gastrointestinal bleeding: Guideline recommendations from the international consensus group. Ann. Internal Med., 171: 805-822.
27. Veron, E.D., F.A. Batiz, A.C.D. Cazares, S.M. Oviedo and S.M.F. Jarvio,et al., 2019. Validation of dapt score for prolonged dual antiplatelet therapy in patients with acute myocardial infarction. Hellenic J. Cardiol., 60: 296-302.
28. Chao, T.F., Y.J. Lin, S.L. Chang, L.W. Lo and Y.F. Hu et al., 2018. Incident risk factors and major bleeding in patients with atrial fibrillation treated with oral anticoagulants: A comparison of baseline, follow-up and delta has-bled scores with an approach focused on modifiable bleeding risk factors. Throm Haem., 47: 768-777.
29. Guo, Y., D.A. Lane, Y. Chen and G.Y.H. Lip, 2020. Regular bleeding risk assessment associated with reduction in bleeding outcomes: The mafa-ii randomized trial. Am. J. Med., 133: 1195-1202.
30. Intagliata, N.M., R.S. Rahimi, F.T. Higuera, D.A. Simonetto and A.Q. Farias et al., 2023. Procedural-related bleeding in hospitalized patients with liver disease (proc-bleed): An international, prospective, multicenter observational study. Gastroenterology, 165: 717-732.
31. Huang, C.H., J.Y. Chao, T.C. Ling, J.L. Wu and J.M. Sung et al., 2023. Effect of dialysis modalities on risk of hospitalization for gastrointestinal bleeding. Sci. Rep., Vol. 13, No. 1 .10.1038/s41598-022-26476-5.