Original Article

The Predictive Value of Precise-Dapt Score for Mortality in Patients with Acute Decompansed Heart Failure

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Abstract

Introduction: Acute decompensated heart failure (ADHF) is an emergency clinical syndrome defined as a sudden worsening of heart failure. PREdicting bleeding Complications In patients undergoing Stent implantation and subsEquent Dual Anti-Platelet Therapy (PRECISE-DAPT) score is a new scoring used in the management of duration of dual-antiplatelet therapy after coronary intervention. We presented the hypothesis that this scoring can be used as a predictor of mortality in heart failure. **Objective:** In this study, the correlation between mortality and PRECISE-DAPT score will be analyzed in patients diagnosed with ADHF. **Materials and Methods:** A total of 114 patients hospitalized with a diagnosis of ADHF were included in this study. The patients were divided into two groups: PRECISE-DAPT score ≥25 and PRECISE-DAPT score <25, and these groups were evaluated in terms of correlation with early (<6 months), late (>6 months) and overall mortality. **Results:** According to univariate analysis, it was found that PRECISE-DAPT score was significantly related with early ($P < 0.001$), late ($P < 0.001$), and overall ($P < 0.001$) mortality. Multivariate Cox regression analysis showed that PRECISE-DAPT was independently associated with late (hazard ratio: 6.6; 95% confidence interval [CI] 1.6–27.3; $P = 0.009$) and overall (hazard ratio: 11.3; 95% CI 3.2–40.9; $P < 0.001$) mortality. According to Kaplan–Meier curve, those with a score of ≥25 were shown to have significantly higher mortality. The predictive ability for the PRECISE-DAPT score threshold value of 25 was investigated in 3 mortality subgroups. **Conclusion:** The PRECISE-DAPT score may be a significant independent predictor of mortality in patients with ADHF. **Limitations:** This study is subject to the limitations inherent to a retrospective study and the sample size in our study is relatively small.

Keywords: Heart failure, mortality, score

Introduction

Acute decompensated heart failure (ADHF) is an emergency clinical syndrome defined as a sudden worsening of heart failure symptoms (dyspnea, orthopnea, swelling of the lower extremity). ADHF, which accounts for most of the sudden-onset dyspnea cases in the elderly patient population, constitutes about 40% of the elderly patients admitting to the emergency department with this complaint in the USA.[1,2] While about 20% of these patients have no history of previous cardiac disease, the remaining vast majority have preexisting systolic or diastolic heart failure with or without valvular regurgitation or coronary artery disease (CAD).[3] Despite many studies and treatment efforts to reduce mortality rates in heart failure with an annual treatment cost of about $ 40 billion, decompensated heart failure has annual mortality rates ranging from 25% to 40% in the population aged 65 years or over.[4,5]

The PREdicting bleeding Complications In patients undergoing Stent implantation and subsEquent Dual Anti-Platelet Therapy (PRECISE-DAPT) score is a new scoring used

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in the management of duration of dual-antiplatelet therapy after coronary intervention, consisting of age, hemoglobin, creatinine clearance, white blood cell, and history of previous spontaneous bleeding factors.[6]

We presented the hypothesis that this scoring can be used as a predictor of mortality in heart failure as these parameters used in the scoring are also contributing factors in the prognosis of heart failure. To the best of our knowledge, there is no data in the literature on the significance of PRECISE-DAPT for ADHF patients. In this study, the correlation between mortality and PRECISE-DAPT score will be analyzed in patients diagnosed with ADHF. This article was previously presented as a meeting abstract at the TSC Clinical Studies Application and Education Project Group-(STATISTANBUL 2020) February 29, 2020.

Materials and Methods

Patients

In this study, patients who presented to the emergency department with acute decompensated cardiac failure findings and were admitted to the cardiology clinic with this diagnosis between July 2012 and February 2014 were retrospectively scanned through the records, emergency and cardiology department files, and electronic information system. Patients who could not be diagnosed definitively because of their insignificant symptoms were excluded from the study. It was found that 114 of these patients met the study inclusion criteria.

Inclusion and exclusion criteria

Patients evaluated in the emergency department with the complaints of newly developed or rapidly worsening shortness of breath, palpitations, orthopnea, swelling in the feet and found to have diffuse crepitant rales in bilateral lower or middle zones and pretibial edema on physical examination and congestion and pleural fluid findings on chest X-ray and responded to diuretic therapy and admitted to the cardiology clinic with the diagnosis of ADHF, according to the Framingham Heart Failure Diagnostic Criteria[7] were included in the study by reviewing emergency room examination form and the cardiology admission file. Those with chronic lung disease, congenital heart disease, severe valvular dysfunction, cardiac tamponade, cardiac thrombus and vegetation, kidney failure (glomerular filtration rate [GFR] <30), renal artery stenosis and pheochromocytoma, severe liver failure, those aged under 18 years, patients with malignant neoplasm and infectious and inflammatory disease were excluded from the study. Patients who had uncertain complaints and did not receive a definitive diagnosis were not included in the study. In addition, patients with coronary stenosis over 60% on coronary angiography performed on suspicion of coronary ischemia or ischemia on myocardial perfusion scintigraphy (MPS) were excluded from the study.

Data analysis

All patients underwent electrocardiography, routine hemogram and biochemistry analysis, arterial blood gas analysis, electrocardiography, chest X-ray, and transthoracic echocardiography during the admission. The duration of complaints, number of hospitalizations, treatment compliance, history of chronic disease, medical treatment used, and history of smoking or substance use of the patients were noted.

The patients were evaluated for the first time in the emergency department with Philips portable echocardiography and for the second time after admission to the cardiology ward with GE Vivid 3 Pro echocardiography. First parasternal, then apical four chambers and two-chamber along with valvular functions, systolic and diastolic functions, and left and right ventricles were evaluated in the patients placed in the left lateral and supine positions. The patients with orthopnea underwent echocardiographic evaluation with the bed elevated to 45°. In addition, left ventricular ejection fractions were calculated using the modified Simpson technique.

During the admission of the patients, routine urea, creatinine, GFR, alanine aminotransferase, aspartate aminotransferase, total cholesterol, high-density lipoprotein, low-density lipoprotein, total protein, thyroid-stimulating hormone, troponin, admission blood glucose levels were studied in the biochemistry laboratory. Moreover, peripheral venous blood samples were studied in the hematology laboratory and complete blood cell parameters were calculated using an automated complete blood count device (BeckmanCoulter, Brea, CA, USA). The patients with acute coronary ischemia and troponin elevation were primarily evaluated for coronary ischemia by coronary angiography or MPS, and those found to have coronary ischemia were excluded from the study. The data to be evaluated were obtained from the patient files via the electronic information recording system of our hospital. The follow-up parameters included outpatient clinic follow-up examinations and phone calls. All data were arranged within the framework of the case registration form.

The PRECISE-DAPT scores of the patients were calculated using a web calculator (http://www.precisedaptscore.com). The patients were divided into two groups: PRECISE-DAPT score ≥25 and PRECISE-DAPT score <25, and these groups were evaluated in terms of correlation with mortality. The diastolic blood pressures of the patients were categorized as Grade 1 hypertension: 90–99 mmhg, Grade 2 hypertension: 100–109 mmhg, Grade 3 hypertension: ≥110 mmhg. The reference range value for troponin was taken as 0–0.034 ng/ml.

Statistical analysis

We analyzed the data with SPSS, version 21.0 for Windows (IBM Corp., Armonk, NY). Numerical variables were summarized as mean ± standard deviation, median (minimum-maximum) values. Categorical variables were shown with numbers and percentages. The numerical variables analyzed in the study were described with mean and standard deviation, and while categorical variables were described with frequency and percentage values. The correlation between categorical variables was analyzed with the Chi-square test. The difference between the two independent means was analyzed

with the Mann–Whitney U Test. Two independent means were compared with the Mann–Whitney U Test. In the analysis of survival, Kaplan–Meier Analysis and multivariate Cox Regression Analysis methods were used. The study was conducted at a confidence level of 95%. The level of significance was set at $P < 0.05$.

Ethical statement

The study protocol was approved by the Local Ethics Committee. Patient Consent Declaration was obtained from the patients. The study was conducted in accordance with the Helsinki Declaration.

Results

Our study included patients who were hospitalized with the diagnosis of ADHF, Class IV according to New York Heart Association Functional Classification for Heart Failure, (n = 114, mean age 67.4 ± 10) by evaluating retrospectively.

The patients were divided into two groups based on their PRECISE-DAPT scores (PRECISE-DAPT ≥25 vs. PRECISE-DAPT <25). Of the patients, 63 (55%) had a PRECISE-DAPT score of ≥25 and 51 (45%) had a PRECISE-DAPT score of <25. The median (interquartile range) follow-up time of the patients was 19 (25) months. The demographic and clinical characteristics of the patients are given in Table 1.

The mean value of ejection fraction of patients is 29.7% ± 6.3% and 80.7% of these consist of ischemic heart disease. Furthermore, it can be said that acute heart failure develops secondary to hypertension due to very high systolic and diastolic pressures of patients.

There was no significant correlation between the patients with a PRECISE-DAPT score ≥25 and PRECISE-DAPT score <25 in terms of gender, diabetes mellitus, hypertension, and cerebrovascular event frequency. It was found that the ages of the patients with a PRECISE-DAPT score of ≥25 were significantly higher than that of PRECISE-DAPT <25 group (61.3 ± 10 vs. 72.4 ± 7.9; $P < 0.01$). Moreover, it was found that ischemic cardiomyopathy (95.2% vs. 4.8%; $P < 0.01$) and bleeding history (74.6% vs. 25.4% $P < 0.01$) were significantly more frequent in those with a PRECISE-DAPT score of ≥25 had, and that their diastolic

Table 1: Baseline characteristics of the study population and relation with precise dual anti-platelet therapy score

	Toplam (n=114)	Precise-DAPT<25 (n=51)	Precise-DAPT≥25 (n=63)	P
Age, years (mean±SD)	67.4±10.4	61.3±10.0	72.4±7.9	<0.001
Sex, n (%)				
Female	51 (44.7)	21 (41.2)	30 (47.6)	0.492
Male	63 (55.3)	30 (58.8)	33 (52.4)	
Prior bleeding, n (%)	16 (14)	0 ()	16 (25.4)	<0.001
In-hospital mortality, n (%)	10 (8.8)	0 ()	10 (15.9)	0.002
Duration of follow-up, median (IQR)	19 (25)	25 (21)	9 (20.5)	<0.001
Mortality, n (%)				
Survivors	64 (56.1)	46 (90.2)	18 (28.6)	<0.001
Early mortality (≤6 months)	26 (22.8)	1 (2)	25 (39.7)	
Late mortality (>6 months)	24 (21.1)	4 (7.8)	20 (31.7)	
Total population, n (%)				
Survivors	65 (57)	47 (92.2)	18 (28.6)	<0.001
Non-survivors	49 (43)	4 (7.8)	45 (71.4)	
Hypertension	87 (76.3)	37 (72.5)	50 (79.4)	0.395
Diabetes mellitus	46 (40.4)	17 (33.3)	29 (46)	0.169
Hyperlipidemia	49 (43)	23 (45.1)	25 (39.7)	0.681
Prior coronary artery disease	73 (64)	31 (60.8)	42 (66.7)	0.515
Prior cerebrovascular event	10 (8.8)	4 (7.8)	6 (9.5)	>0.999
Type of cardiomyopathy, n (%)				
Ischemic	92 (80.7)	32 (62.7)	60 (95.2)	<0.001
Nonischemic	22 (19.3)	19 (37.3)	3 (4.8)	
Sistolic blood pressure (mmhg) (mean±SD)	213.3±24.4	210.1±24.9	215.9±23.9	0.161
Diastolic blood pressure (mmhg) (mean±SD)	111.1±11.4	108.9±10.8	112.8±11.6	0.033
Heart rate (beats per min)	115.7±10.2	117.5±11.7	114.2±8.5	0.315
Troponin I (ng/ml) (mean±SD)	0.35±0.65	0.28±0.63	0.40±0.66	0.013
Blood urea nitrogen (mg/dl)	24.3±10.5	20.7±8.8	27.3±10.9	0.073
Ejection fraction % (mean±SD)	29.7±6.3	29.3±6.3	30.1±6.2	0.515
Precise-DAPT score (mean±SD)	33.4±50.8	18.1±5.4	45.9±65.8	<0.001
GWTG-heart failure risk score	33.2±5.5	29.6±4.3	36.1±4.5	0.061

DAPT: Dual antiplatelet therapy, SD: Standard deviation, IQR: Interquartile range, GWTG: Get with the guidelines

blood pressures (108.9 ± 10 vs. 112.8 ± 11.6; $P = 0.033$) were significantly higher at the time of admission. The patients with a PRECISE-DAPT of ≥25 were found to have significantly higher troponin values (0.28 ± 0.63 vs. 0.40 ± 0.66; $P = 0.013$) (reference troponin value: 0–0.034 ng/ml) at the time of admission [Table 1].

The mortality of the patients was analyzed by categorizing into 3 groups as early (<6 months), late (>6 months), and total. When the patients with early mortality were evaluated, it was found that PRECISE-DAPT score, bleeding history, diastolic blood pressure, admission troponin value, ischemic CMP frequency were factors affecting early mortality. However, when the factors affecting early mortality were evaluated by multivariate analysis, it was found that these values were not an independent risk factor [Table 2].

When the patients with late mortality (>6 months) were evaluated, it was found that PRECISE-DAPT score, age, bleeding history, admission diastolic blood pressure, and admission troponin values were factors affecting late mortality. When these factors were evaluated by multivariate analysis, it was found that PRECISE-DAPT score was an independent risk factor in the patients with late mortality, and that mortality was 6.6 times higher in the patients with a PRECISE-DAPT score of ≥25% [Table 3].

When the total mortality of the patients was evaluated, it was found that the patients with a PRECISE-DAPT score of ≥25 had significantly higher mortality [Table 2]. It was also found that the patients who died had more frequent bleeding history, higher diastolic blood pressures, and higher troponin values.

When the patients were evaluated with multivariate analysis in terms of total mortality, the patients with a PRECISE-DAPT score of ≥25 were shown to have 11.3 times (3.2–40.9; $P < 0.01$) higher mortality rate and their bleeding rates were independently significantly higher [Table 4].

When early, late, and total mortality values and PRECISE-DAPT were evaluated with the Kaplan–Meier curve, those with a score of ≥25 were shown to have significantly higher mortality [Figures 1-3].

The predictive ability for the PRECISE-DAPT score threshold value of 25 was investigated in all patients and early and late mortality subgroups. The area under the curve values obtained from receiver operating characteristic Analysis were calculated. Accordingly, it was found to have a high predictive power for all three groups [Figure 4].

In cases where the PRECISE-DAPT value is calculated as 25 and higher, the predictive validity for mortality was calculated when the survived patients and all died patients were included (91.8%), when the survived patients and the patients died before 6 months (96.2%) were included, and when the survived patients and the patients died after 6 months were included (83.3%) [Table 5].

In cases, where the PRECISE-DAPT value is calculated below 25, the predictive validity for mortality was calculated when the survived patients and all died patients were included (72.3%), when the survived patients and the patients died before 6 months were included (71.9%), and when the survived patients and the patients died after 6 months were included (71.9%) [Table 5].

Table 2: Significant predictors of early mortality in univariable and multivariable cox regression analyses

	Univariate			Multivariate		
	Median (months)	95% CI	*P* (Log-rank)	HR	95% CI	*P*
Age (years) ≥69.5	-	-	0.001	1.0	0.4-2.7	0.962
Prior bleeding (+)	1.5	0.4-2.6	<0.001	2.4	1.0-5.8	0.058
Ischemic CMP (+)	-	-	0.004	16476	0-2.5E+87	0.921
Diastolic blood pressure (mmhg) ≥110	-	-	0.065	1.5	0.6-4.1	0.415
Tn I (ng/ml) ≥0.045	63.0	-	0.007	1.9	0.8-4.4	0.159
Precise DAPT≥25	5.0	1.3-8.7	<0.001	210865	0-2.5E+95	0.908
Overall	63.0	-				

Tn: Troponin, CMP: Cardiomyopathy, CI: Confidence interval, HR: Hazard ratio, DAPT: Dual antiplatelet therapy

Table 3: Significant predictors of late mortality in univariable and multivariable cox regression analyses

	Univariate			Multivariate		
	Median (months)	95% CI	*P* (Log-rank)	HR	95% CI	*P*
Age (years) ≥69.5	53.0	18.4-87.6	0.013	0.96	0.4-2.6	0.959
Prior bleeding (+)	9.5	8.1-10.9	<0.001	4.4	1.6-11.7	0.003
Ischemic CMP (+)	-	-	0.054	1.2	0.3-4.6	0.793
Diastolic blood pressure (mmhg) ≥110	53.0	33.9-72.1	0.029	2.5	0.8-7.5	0.112
Tn I (ng/ml) ≥0.045	-	-	0.037	1.5	0.6-3.6	0.395
Precise DAPT≥25	22.0	2.5-41.5	<0.001	6.6	1.6-27.3	0.009
Overall	-	-				

Tn: Troponin, CMP: Cardiomyopathy, CI: Confidence interval, HR: Hazard ratio, DAPT: Dual anti-platelet therapy

Table 4: Significant predictors of overall mortality in univariable and multivariable cox regression analyses

	Univariate			Multivariate		
	Median (months)	95% CI	*P* (Log-rank)	HR	95% CI	*P*
Age (years) ≥69.5	14.5	5.1-23.9	<0.001	1.1	0.6-2.2	0.716
Prior bleeding (+)	6.0	2.7-9.3	<0.001	2.2	1.2-4.2	0.017
Ischemic CMP (+)	24.0	1.8-46.2	0.001	1.8	0.5-6.4	0.340
Diastolic blood pressure (mmhg) ≥110	24.0	3.8-44.2	0.009	1.9	0.9-4.0	0.093
Tn I (ng/ml) ≥0.045	17.0	7.1-26.9	0.003	1.6	0.9-3.0	0.119
Precise DAPT≥25	10.0	4.4-15.6	<0.001	11.3	3.2-40.9	<0.001
Overall	53.0	9.0-96.7				

Tn: Troponin, CMP: Cardiomyopathy, CI: Confidence interval, HR: Hazard ratio, DAPT: Dual antiplatelet therapy

Table 5: Cut-off characteristics

Precise DAPT≥25	Overall	Early	Late
Sensitivity (95% CI)	0.918 (0.804-0.977)	0.962 (0.804-0.999)	0.833 (0.626-0.953)
Specificity (95% CI)	0.723 (0.598-0.827)	0.719 (0.592-0.824)	0.719 (0.592-0.824)
PPV (95% CI)	0.714 (0.626-0.789)	0.581 (0.482-0.674)	0.526 (0.419-0.631)
NPV (95% CI)	0.922 (0.820-0.968)	0.979 (0.870-0.997)	0.920 (0.823-0.966)
Accuracy (95% CI)	0.807 (0.723-0.875)	0.789 (0.690-0.868)	0.750 (0.646-0.836)

DAPT: Dual antiplatelet therapy, CI: Confidence interval, PPV: Positive predictive value, NPV: Negative predictive value

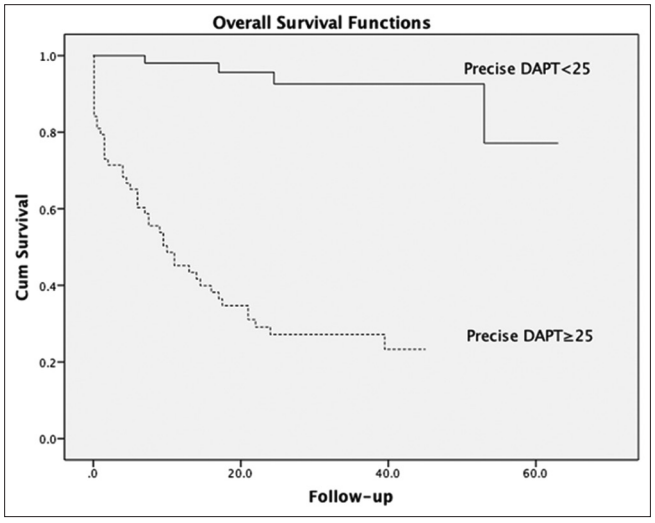

Figure 1: Kaplan Meier overall survival curve according to PREdicting bleeding Complications In patients undergoing Stent implantation and subsEquent Dual Anti-Platelet Therapy

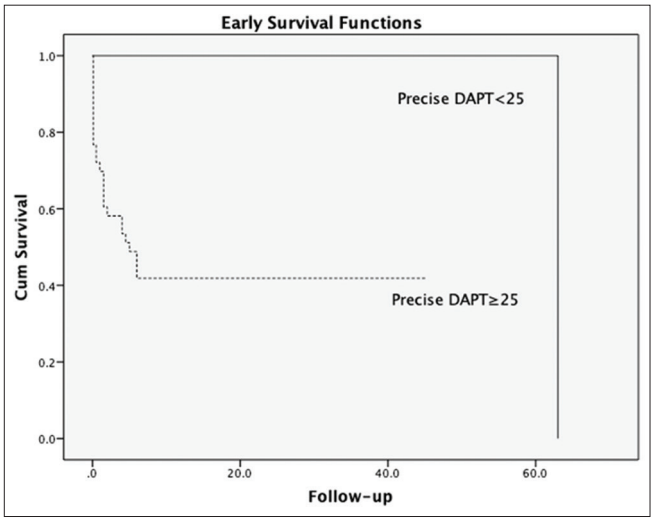

Figure 2: Kaplan Meier early survival curve according to PREdicting bleeding Complications In patients undergoing Stent implantation and subsEquent Dual Anti-Platelet Therapy

Accordingly, it was found that the threshold value had a high predictive power for all three different cases analyzed in our study.

Discussion

In this study, we demonstrated that PRECISE-DAPT score is independently correlated with mortality in patients hospitalized with ADHF. As far as we know, our study is the first study evaluating the correlation between PRECISE-DAPT and mortality in patients with acute decompression heart failure.

The incidence of heart failure has increased due to the increasing elderly population and prolonged surveillance of cardiovascular diseases with modern treatment methods. It is considered global health problem. In addition, due to the need for life-long treatment, frequent hospitalization, different device, and medical treatment options brought about high costs on health economics.[8,9] Despite the increase in the functional capacity of the patients and the decrease in the frequency of hospitalization with the treatment protocol recommended by the guidelines, the hospitalization and mortality rates of the disease are higher than the study data due to patient-treatment incompatibility and the lack of adequate treatment.[10] Moreover, due to the multifactorial heterogeneous pathophysiology of heart failure, many factors affecting the short and long-term prognosis have been reported.

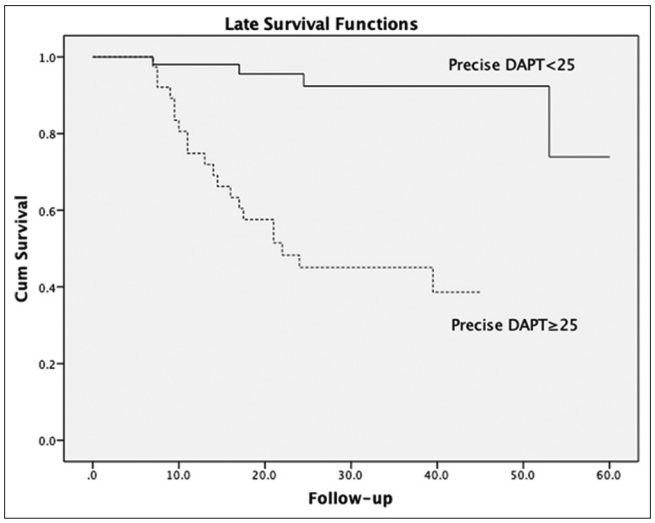

Figure 3: Kaplan Meier late survival curve according to PREdicting bleeding Complications In patients undergoing Stent implantation and subsEquent Dual Anti-Platelet Therapy

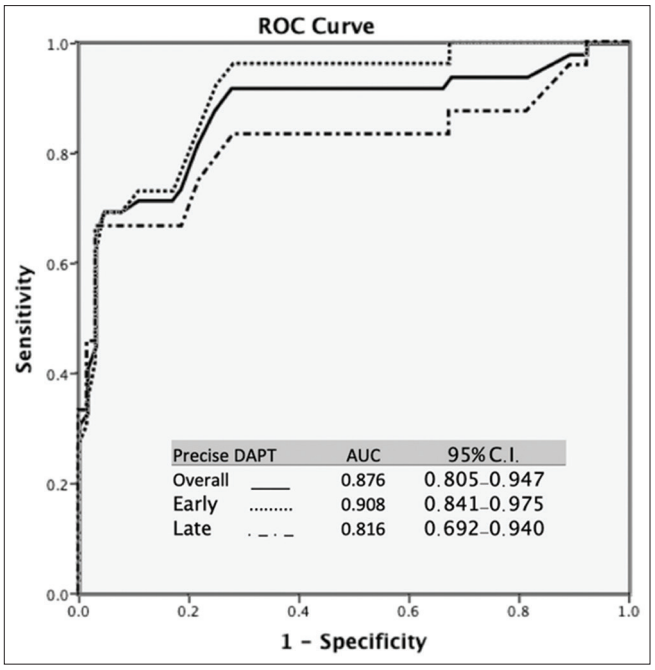

Figure 4: Receiver operating characteristic Curves according to PREdicting bleeding Complications In patients undergoing Stent implantation and subsEquent Dual Anti-Platelet Therapy score cut-off

The incidence of heart failure increases with age.[11] Moreover, the Framingham study showed that advanced age is a predictor of shortened survival in individuals with congestive heart failure, showing an increase of 27% in mortality in men and 61% in women in each following decade.[12] In addition, the retrospective study by Jong *et al*. on 38702 patients showed that increasing age is associated with poor prognosis in heart failure.[13] Age increases the frequency in patients with heart failure as well as negatively affects the prognosis.

Anemia, affected by many factors commonly accompanying heart failure, such as chronic inflammation, kidney failure, nutritional deficiency, advanced age, drug use, diabetes mellitus, is present in about one-third of patients with heart failure. Varying degrees of anemia have been reported to increase symptoms of heart failure as well as hospitalization and mortality rates.[14-16]

Kidney diseases and heart diseases are among the major health problems worldwide and constitute a complex structure. GFR has been defined by the National Kidney Foundation practice guidelines as the best measurement tool for assessing kidney functions and has taken the first place in the evaluation of kidney functions.[17] It has been shown that while the main cause of death in nondialysis-dependent chronic kidney disease is CAD and there is a significant correlation between the level of GFR and the severity of CAD.[18] Epidemiological studies have reported that renal dysfunction secondary to neurohormonal, parenchymal edema-injury, congestion or ischemia, secondary to medication is frequently present in 17%–30% of patients with acute heart failure. Worsening heart failure is associated with worsening kidney function and often exacerbates the other. The correlation of low GFR and high BUN levels with increased mortality and morbidity in patients with heart failure has been demonstrated by many studies.[19-21]

The white blood cell count, also called leukocytes, is one of the three main types of blood cells in the blood and is considered as one of the indicators of inflammation in the body.[22] Chronic inflammation level has been associated with serious health problems such as chronic heart disease, diabetes mellitus, and malignancies, and the large observational study by Menon *et al*. showed that peripheral total leukocyte count was strongly correlated with heart failure, cardiogenic shock and mortality during hospitalization of patients with acute myocardial infarction (MI). It has been shown to be somewhat related.[23] Acute and chronic inflammation plays an active important pathophysiological role in the onset and progression of heart failure and other cardiovascular diseases. Stimulation of inflammation stimulates proteolytic enzyme and pro-inflammatory cytokines, then elevated cytokines and inflammation levels can cause myocardial depression, cardiac dysrhythmias, and myocardial remodeling, which may result in heart failure. In previous studies, inflammatory cytokines such as C-reactive protein, interleukin (IL)-4 IL-6 have been shown to be associated with increased mortality.[24,25] In addition, inflammation has been shown to play an active role in the pathophysiology of both acute and chronic heart failure, and it has been emphasized that treatment management can focus on treatments for inflammation, and inflammatory markers can be used to predict prognosis.[24-26]

An increase in minor or major bleeding is an expected picture in cardiovascular diseases, due to single, double, or triple antiaggregant and anticoagulant therapy, which are frequently used for reasons such as valvular lesions, arrhythmia, CAD, and thrombus compared to patients not receiving this treatment. Especially even isolated major bleeding-related mortality can be high, the history of previous bleeding in patients with

heart failure can be considered as a poor prognostic factor and indicator for recurrent bleeding.

Recent studies have shown that there may be a close correlation between PRECISE-DAPT and cardiovascular events. The study by Yildirim *et al*. included 706 ST Segment Elevation MI patients and showed a significant correlation between PRECISE-DAPT and high-degree AV block and AF.[27]

In another study by Çınar *et al*., the correlation between the development of contrast nephropathy was investigated in patients undergoing primary percutaneous intervention with the diagnosis of ST elevation. The study included 1280 patients undergoing percutaneous coronary intervention with the diagnosis of MI and the postoperative 72-h creatinine values were evaluated to calculate contrast nephropathy and categorized as contrast-induced nephropathy (CIN) and non-CIN. As a result, it was found that there was a significant correlation between the risk of developing CIN in the group with high PRECISE-DAPT score.[28]

PRECISE-DAPT score is a new scoring system that determines the duration of bilateral antiplatelet therapy for patients undergoing coronary intervention, in which patients are classified by the risk of bleeding. Patients with a PRECISE-DAPT score ≥25 have a higher risk of bleeding, and therefore shorter-term bilateral antiplatelet use is recommended. Heart failure is a multifactorial process, increasing frequency with age, often accompanied by comorbidities such as anemia, kidney failure, a history of bleeding due to the use of multiple antiplatelet or anticoagulant drugs, and inflammation contributes to an important pathophysiological process in both acute and chronic stages. Given all of the above risk factors, the parameters age, hemoglobin level, GFR value, leukocyte count and previous bleeding history that make up the PRECISE-DAPT score are also the factors that contribute to the heart failure prognosis.[6] The predictive value of mortality of PRECISE-DAPT score in patients with ADHF is uncertain, and this study may be the first study to show that PRECISE-DAPT score can be considered as a mortality predictor in patients with ADHF.

In addition, the precise DAPT score was also compared with the GWTG heart failure risk score, a heart failure mortality score, and was not statistically significant, although it was close to the significance value. This correlation may not have been found due to the small number of patients.

PRECISE DAPT is a score that can be calculated easily and does not require an additional medical examination. Heart failure is also a chronic disease that we often encounter in emergency departments and still has a high mortality rate. PRECISE DAPT can be easily calculated in the first application and we can schedule more frequent examinations and increase treatment for mortality based on the risk score. Medical or device treatment may be planned earlier. But to use this score routinely, we need further studies with long-term follow-up and large-scale prospective data.

Study limitations

Our study has some limitations. First, the most important limitations are retrospective design and small sample size. Second, we were only able to assess the overall cause and mortality due to the lack of data on the causes of death. Third, due to the lack of data, the correlation of PRECISE DAPT with other heart failure mortality scores could not be evaluated. Forth, due to lack of data, BNP or NT-proBNP measurements were not reported.

In order to explain the correlation between mortality and PRECISE-DAPT score in patients with acute decompensated cardiac disease, there is a need for multicenter, prospective, and longer-term studies with a larger sample size.

Conclusion

As far as we know, our study is the first study evaluating the correlation between PRECISE-DAPT and mortality in patients with acute decompression heart failure. PRECISE-DAPT score is an easy to memorize scoring system that can be easily calculated in emergency departments, even in rapidly developing cardiovascular events, and does not contain any parameter other than routine biochemical evaluations. In acute decompensated patients whose short and long-term mortality is still high, it may predict to differentiate the group of patients with higher mortality during initial medical contact or hospitalization process and to consider more intensive follow-up or further treatment for this population.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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