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Antiplatelet Treatment Preferences of a Group of Cardiologists from Türkiye: A Survey Research Study

Türkiye'deki Bir Grup Kardiyoloji Uzmanının Koroner Arter Hastalığında Anti-Platelet Tedavi Tercihleri: Anket Çalışması

ABSTRACT

Objective: Deciding on the optimal duration of dual antiplatelet treatment (DAPT) remains a complex decision. This survey aims to explore the preferences for antiplatelet therapy and the daily routine regarding DAPT duration in coronary artery disease among a group of cardiologists in Türkiye.

Method: Using an online questionnaire with 38 questions, the preferences of 314 cardiologists were collected. Qualitative descriptive characteristics of the answers received from the participants were examined.

Results: Participating cardiologists mostly worked in training and research hospitals (51.59%) and university hospitals (21.66%). Participants primarily favored ticagrelor in patients undergoing PCI with a diagnosis of STEMI and NSTE-ACS (69.75% and 55.73% respectively). Clopidogrel was the most preferred $P2Y_{12}$ treatment in patients with chronic coronary syndrome (CCS) after PCI (94.90%). Pre-treatment with a loading dose of a $P2Y_{12}$ receptor inhibitor was administered to 57.01% of patients with NSTE-ACS, irrespective of the planned treatment strategy. In NSTE-ACS patients with low bleeding risk treated with PCI, 83.12% of participants recommended DAPT for 12 months and 14.65% for >12 months. In high-bleeding-risk NSTE-ACS patients treated with PCI, DAPT durations of six months (74.52%), three months (19.75%), and one month (5.73%) were chosen. Among CCS patients treated with PCI without an increased risk of bleeding, 12 months of DAPT was preferred by 68.15% of participants. Most participants (70.70%) were switching to a more potent $P2Y_{12}$ receptor inhibitor therapy in emergency department clopidogrel-loaded patients with ACS.

Conclusion: The aim of this survey to capture a snapshot of the preferences of a group of cardiologists in Türkiye regarding DAPT treatment and duration. The responses were both in accordance and in conflict with the current guidelines.

Keywords: Acute coronary syndromes, antiplatelet agents, chronic coronary syndromes

ÖZET

Amaç: İkili antiplatelet tedavinin süresine karar vermek kompleks bir karar olmaya devam etmektedir. Bu araştırma, Türkiye'den bir grup kardiyoloji uzmanının günlük pratiklerindeki koroner arter hastalarında antiplatelet tedavi tercihlerini ve tedavi sürelerini araştırmayı amaçlamaktadır.

Yöntem: Çevrimiçi 38 soruluk bir anket yoluyla, 314 kardiyoloğun antiplatelet tedavi tercihleri toplandı. Katılımcıdan alınan cevapların nitel tanımlayıcı özellikleri incelendi.

Bulgular: Çalışmaya katılan kardiyologlar, en çok eğitim ve araştırma hastanelerinde (%51,59) ve üniversite hastanelerinde (%21,66) çalışmaktaydı. Katılımcılar STEMI ve NSTE-AKS tanısı ile PKG uygulanan hastalarda en çok tikagrelor tercih etmekteydi (sırasıyla %69.75 ve %55.73). Kronik koroner sendrom (KKS) tanısı ile PKG uygulanan hastalarda en çok klopidogrel (%94,90) tercih edilmekteydi. Katılımcıların %57,01'i, NSTE-AKS'li hastalarında planlanan tedavi stratejisinden bağımsız olarak $P2Y_{12}$ reseptör inhibitörü yükleme dozu ile ön tedavi uygulamaktaydı. Kanama riski düşük olup PKG ile tedavi edilen NSTE-AKS hastalarında, katılımcıların %83,12'si 12 ay ve %14,65'i >12 ay süreyle DAPT tercih etmekteydi. PKG ile tedavi edilen yüksek kanama riskli NSTE-AKS hastalarında altı aylık (%74,52), üç aylık (%19,75) ve bir aylık (%5,73) DAPT süreleri seçilmekteydi. Kanama riski yüksek olmayan ve PKG ile tedavi edilen KKS hastalarında katılımcıların %68,15'i 12 aylık DAPT'ı tercih etti. Çoğu katılımcı (%70,70), akut koroner sendrom nedeniyle acil serviste klopidogrel yüklenmiş hastalara daha güçlü bir $P2Y_{12}$ reseptör inhibitörü tedavisine geçmekteydi.

Sonuç: Türkiye'deki kardiyologların DAPT tedavisi ve süresi ile ilgili tercihlerini fotoğraflamak istediğimiz bu ankette, mevcut kılavuzlarla tutarlı ve çelişkili sonuçlar bulduk.

Anahtar Kelimeler: Akut koroner sendromlar, antiagregan tedavi, kronik koroner sendromlar

ORIGINAL ARTICLE
KLİNİK ÇALIŞMA

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Antiplatelet therapy plays a vital role in the management of the patients with acute coronary syndromes and those with chronic coronary artery diseases who underwent percutaneous coronary interventions (PCI) or surgery for revascularization.

The European Society of Cardiology has endeavored to systematize the selection of antiplatelet drugs and the duration of dual antiplatelet therapy (DAPT) through guidelines.[1-2] The 2020 guideline on Non-ST-Elevation Acute Coronary Syndrome (NSTE-ACS) emphasizes that the optimal treatment for NSTE-ACS patients undergoing coronary revascularization is still under investigation.[3] Current approaches involve calculations to decide in which cases DAPT is necessary, effective, and safe. The use of the Predicting Bleeding Complications in Patients Undergoing Stent Implantation and Subsequent Dual Antiplatelet Therapy (PRECISE-DAPT) and DAPT scores to determine the duration of DAPT after PCI is recommended.[4,5] These scores not only guide in preventing ischemic events but also provide recommendations for maintaining low bleeding rates, which is equally important.

The duration of DAPT is controversial because studies comparing long-term DAPT in coronary syndromes lack a significant net benefit, calculated by comparing the reduction in stent thrombosis and new myocardial infarction against the increased rates of major bleeding and all-cause death.[6-10] Another issue of debate is the selection of the appropriate $P2Y_{12}$ inhibitor in DAPT. It has been suggested that ticagrelor or prasugrel may be preferred in patients with a high risk of stent thrombosis.

It is recommended that each patient's individual risk of bleeding and thrombosis be taken into account when determining the duration of DAPT.[11-12] The purpose of this survey is to explore the preferences of cardiologists in Türkiye regarding antiplatelet therapy and their daily routine concerning the duration of DAPT in coronary artery disease.

Materials and Methods

APT-TR is an observational, descriptive, cross-sectional study. The study was conducted in accordance with the Declaration of Helsinki and approved by the the Demiroğlu Bilim University Clinical Research Ethics Committee (Approval Number: 2022-12-03, Date: 29.06.2022). Participants were included from all throughout Türkiye from June 29, 2022 to October 15, 2022. The questionnaire was shared via a link on social media accounts and scientific sites to reach cardiology physicians in as many different locations as possible. The preferences of cardiologists in various circumstances were collected through an online survey consisting of 38 questions. These questions were prepared considering current guidelines, aiming to highlight unclear issues.[1,2,13,14] The questionnaire aimed to evaluate the $P2Y_{12}$ preferences, decision-making processes, and treatment durations among cardiologists from Türkiye. Participants were selected from invasive and non-invasive cardiology clinics such as training and research hospitals, university hospitals, private hospitals, and public hospitals. Responses from participants were analyzed, investigating quantitative descriptive features (Table 1).

ABBREVIATIONS

CAD	Coronary artery disease
CCS	Chronic coronary syndrome
DAPT	Dual antiplatelet treatment
NSTE-ACS	Non-ST-elevation acute coronary syndrome
PCI	Percutaneous coronary intervention
PCI	Percutaneous coronary interventions
PRECISE-DAPT	Predicting bleeding complications in patients undergoing stent implantation and subsequent dual antiplatelet therapy
STEMI	ST-elevation myocardial infarction

Results

A total of 314 cardiologists (21.34% female) participated in the study. Their workplaces were primarily training and research hospitals (51.59%), followed by university hospitals (21.66%), private hospitals (14.65%), and public hospitals (12.10%). Their mean age was 45.5 ± 6.3 years. All had 24-hour coronary angiography (CAG)/ PCI capability in their hospitals. The most critical factor in selecting $P2Y_{12}$ receptor inhibitor treatment was effectiveness (70.70%), followed by clinical experience (18.47%) and safety concerns (10.83%) (Table 2).

The participants preferred ticagrelor, clopidogrel, and prasugrel for ST-elevation myocardial infarction (STEMI) patients treated with PCI, at rates of 69.75%, 15.29%, and 14.97%, respectively. In patients diagnosed with NSTE-ACS and treated with PCI, the preference rates for ticagrelor, clopidogrel, and prasugrel were 55.73%, 38.85%, and 5.41%, respectively.

Clopidogrel was preferred in 86.58% of patients administered thrombolytic treatment, while ticagrelor and prasugrel were chosen in 11.82% and 1.60% of patients, respectively.

Pre-treatment with a loading dose of a $P2Y_{12}$ receptor inhibitor treatment was administered in 57.01% of NSTE-ACS patients, irrespective of the planned treatment strategy. Among the participants who considered pre-treatment in NSTE-ACS patients, 70.70% used a 600 mg loading dose of clopidogrel, and 17.83% used a 300 mg dose. A P2Y12 receptor inhibitor was administered to patients with Chronic Coronary Syndrome (CCS) by 38.22% of the participants, and 20.70% considered pre-treatment with a loading dose of a $P2Y_{12}$ receptor inhibitor. The most preferred $P2Y_{12}$ receptor inhibitor in patients diagnosed with CCS after PCI was clopidogrel (94.90%), followed by ticagrelor (3.82%) and prasugrel (1.27%).

Clopidogrel was the most preferred $P2Y_{12}$ receptor inhibitor treatment in 89.17% of patients diagnosed with NSTE-ACS and scheduled for non-invasive treatment, followed by ticagrelor (8.92%) and prasugrel (1.91%).

In patients with NSTE-ACS treated with PCI and without an increased risk of major or life-threatening bleeding, DAPT with a $P2Y_{12}$ receptor inhibitor on top of aspirin was chosen for six months by 1.91%, for 12 months by 83.12%, and for more than 12 months by 14.65%. In patients with NSTE-ACS treated with PCI and at high risk of bleeding, DAPT was chosen for one month at 5.73%, three months at 19.75%, and six months at 74.52%. For patients with NSTE-ACS treated with PCI and without increased risk of bleeding, participants working in private hospitals preferred a six-month DAPT period at a considerably higher rate than those working in other hospitals (6.52% vs. 1.23%, $P < 0.05$).

In patients with CCS treated with PCI and without increased risk of bleeding, DAPT was preferred for 1, 3, 6, 12, and more than

Table 1. Questionnaire

Antiplatelet Treatment Preferences of a Group of Cardiologists from Türkiye: Survey Research - Questionnaire	
1.	Informed consent.
2.	How old are you?
3.	What is your gender?
4.	Which of the following institutions do you work for? ● State Hospital ● Education and Training Hospital ● University ● Private Hospital
5.	Is angiography and/or interventional treatment performed 24 hours a day in your center?
6.	How many patients undergo interventional treatment monthly in your center?
7.	What percentage of your monthly interventional treatment patients have STEMI?
8.	What percentage of your monthly interventional treatment patients have NSTE-ACS?
9.	What percentage of your monthly interventional treatment patients have CCS?
10.	Which of the following primarily affects your choice of $P2Y_{12}$ inhibitor for DAPT after PCI? ● Efficacy ● Safety ● Clinical experience
11.	Which of the following $P2Y_{12}$ inhibitors do you usually prefer in STEMI patients receiving thrombolytic therapy? ● Clopidogrel ● Ticagrelor ● Prasugrel
12.	Which of the following $P2Y_{12}$ inhibitors do you usually prefer for DAPT after PCI in STEMI patients? ● Clopidogrel ● Ticagrelor ● Prasugrel
13.	Which of the following $P2Y_{12}$ inhibitors do you usually prefer for DAPT after PCI in NSTE-ACS patients? ● Clopidogrel ● Ticagrelor ● Prasugrel
14.	Do you preload $P2Y_{12}$ inhibitors in NSTEMI patients scheduled for PCI?
15.	How many mg do you load in NSTEMI patients scheduled for PCI and in your clopidogrel preferences? ● 300 mg ● 600 mg ● None
16.	Which $P2Y_{12}$ inhibitor do you most prefer in your NSTE-ACS patients for whom PCI is not planned? ● Clopidogrel ● Ticagrelor ● Prasugrel
17.	How many months do you continue DAPT after PCI in your ACS patients with low bleeding risk? ● 1 month ● 3 months ● 6 months ● 12 months ● > 12 months
18.	How many months do you continue DAPT after PCI in your ACS patients with high bleeding risk? ● < 1 month ● 1 month ● 3 months ● 6 months
19.	How many months do you continue DAPT after PCI in your patients with low bleeding risk and stable CCS? ● 1 month ● 3 months ● 6 months ● 12 months ● > 12 months
20.	How many months do you continue DAPT after PCI in your CCS patients with high bleeding risk? ● < 1 month ● 1 month ● 3 months

Table 1. Questionnaire (continued)

Antiplatelet Treatment Preferences of a Group of Cardiologists from Türkiye: Survey Research - Questionnaire	
21.	Do you use PRECISE-DAPT for bleeding risk assessment?
22.	How often do you prefer de-escalation therapy (switching from prasugrel or ticagrelor to clopidogrel)? ● < 10% ● 10-20% ● 20-30% ● 30-40% ● > 40%
23.	How often do you prefer clopidogrel in your patients after ACS? ● < 10% ● 10-20% ● 20-30% ● 30-40% ● > 40%
24.	How often do you prefer ticagrelor in your patients after ACS? ● < 10% ● 10-20% ● 20-30% ● 30-40% ● > 40%
25.	How often do you prefer prasugrel in your patients after ACS? ● < 10% ● 10-20% ● 20-30% ● 30-40% ● > 40%
26.	Do you switch to a more potent $P2Y_{12}$ inhibitor in ACS patients loaded with clopidogrel in the emergency department? (In patients with low bleeding risk)
27.	Would you continue DAPT in your diabetic, 67-year-old patient who had two drug-eluting stents for ACS one year ago?
28.	Which antiplatelet drug would you prefer with ASA in the patient above? ● Clopidogrel ● Ticagrelor ● Prasugrel ● Rivaroxaban ● None
29.	Do you prefer to continue with monotherapy treatment with $P2Y_{12}$ inhibitors in your patient who underwent PCI after DAPT for at least three months, in patients without ischemia and significant bleeding?
30.	Do you start a $P2Y_{12}$ inhibitor in stable CCS patients with the possibility of PCI?
31.	Do you preload in the patient example above?
32.	Which $P2Y_{12}$ inhibitor do you usually prefer in your patients with CCS after PCI?
33.	Does the type of stent you use (DES or BMS from different generations) affect your choice of $P2Y_{12}$? ● Clopidogrel ● Ticagrelor ● Prasugrel
34.	In which of the following condition(s) do you prescribe long-term DAPT after PCI? (More than one option can be selected) ● High risk of ischemia ● Stent thrombosis ● Multivessel disease ● Complex coronary lesions ● Chronic total occlusion
35.	Which of the following is your choice of antithrombotic drug in monotherapy after DAPT? ● ASA 81 mg ● ASA 100 mg ● Clopidogrel ● Rivaroxaban 2.5 mg ● Ticagrelor
36.	Do you use $P2Y_{12}$ inhibitors other than clopidogrel in CCS patients?
37.	Do you consent to the submission of these survey results as scientific papers and/or articles?
38.	Please enter your e-mail address (optional).

Table 2. Basal Characteristics of the Participants

Age (years)	45.5 ± 6.3
Female	64 (21.34%)
Institution	
Research Hospitals	162 (51.59%)
University Hospitals	68 (21.66%)
Private Hospitals	46 (14.65%)
Public Hospitals	38 (12.10%)
24-Hour PCI Capable Center	271 (86.31 %)
Determinants of $P2Y_{12}$ Selection	
Efficacy	222 (70.70%)
Clinical Experience	58 (18.47%)
Safety Concern	34 (10.83%)

12 months by 0.64%, 1.91%, 25.16%, 68.15%, and 4.14% of participants, respectively. In patients with CCS at low bleeding risk, DAPT treatment after PCI was not prolonged for more than six months more frequently in participants working in public hospitals than their counterparts in private hospitals and training and research hospitals. (Table 3. Comparison of DAPT duration according to institution in patients with CCS treated with PCI and without increased risk of bleeding)

In patients with CCS treated with PCI and with increased risk of bleeding, DAPT was favored for less than one, one, and three months by 2.23%, 23.57%, and 74.20% of participants, respectively.

De-escalation of $P2Y_{12}$ receptor inhibitor treatment (with a switch from prasugrel or ticagrelor to clopidogrel) was considered in less than 10%, 10-20%, 20-30%, 30-40%, and more than 40% of patients by 40.45%, 29.94%, 19.75%, 4.78%, and 5.10% of participants, respectively. To guide decision-making on DAPT duration, 53.50% of participants considered the PRECISE-DAPT score. Most participants (60.51%) decided on $P2Y_{12}$ receptor inhibitor treatment independently of the stent type.

29.4% of participants used clopidogrel, and 55.73% used ticagrelor in more than 40% of their patients with Acute Coronary Syndrome (ACS). Most participants (70.70%) switched to a more

Table 4. $P2Y_{12}$ Selection of Participants in Different Scenarios

$P2Y_{12}$ Selection in STEMI	
Ticagrelor	219 (69.75%)
Clopidogrel	48 (15.29%)
Prasugrel	47 (14.97%)
$P2Y_{12}$ Selection in NSTE-ACS	
Ticagrelor	175 (55.73%)
Clopidogrel	122 (38.85%)
Prasugrel	17 (5.41%)
$P2Y_{12}$ Selection in CCS	
Clopidogrel	298 (94.90%)
Ticagrelor	12 (3.82%)
Prasugrel	4 (1.27%)
Use of $P2Y_{12}$ in Patients with CCS Scheduled for PCI	120 (38.22%)
Pre-treatment with a Loading Dose in Patients with CCS Scheduled for PCI	65 (20.70%)
$P2Y_{12}$ Selection with Fibrinolysis	
Clopidogrel	271 (86.58%)
Ticagrelor	37 (11.82%)
Prasugrel	5 (1.6%)
$P2Y_{12}$ Selection with Medical Treatment	
Clopidogrel	280 (89.17%)
Ticagrelor	28 (8.91%)
Prasugrel	6 (1.91%)
Pre-treatment with $P2Y_{12}$ in NSTE-ACS	179 (57.01%)
De-escalation	
< 10%	127 (40.45%)
10-20%	94 (29.94%)
20-30%	62 (19.75%)
30-40%	15 (4.78%)
> 40%	16 (5.10%)
Use of PRECISE-DAPT Score	168 (53.5%)
Preference for Monotherapy after DAPT	
ASA 81 mg	87 (27.71%)
ASA 100 mg	134 (42.68%)
Clopidogrel	89 (28.34%)
Rivaroxaban 2.5	1 (0.32%)
Ticagrelor	3 (0.96%)

Table 3. Comparison of DAPT Duration According to Institution in Patients with CCS Treated with PCI and Without Increased Risk of Bleeding. (*): *P* < 0.05

	1 month n (%)	3 months n (%)	6 months n (%)	12 months n (%)	> 12 months n (%)	Total
Public Hospitals	0 (0.00)	0 (0.00)	15 (39.47)*	20 (52.63)*	3 (7.89)	38 (12.10)
Training and Research Hospitals	2 (1.23)	3 (1.85)	38 (23.46)	115 (70.99)*	4 (2.47)	162 (51.59)
University Hospitals	0 (0.00)	2 (2.94)	19 (27.94)	44 (64.71)	3 (4.41)	68 (21.66)
Private Hospitals	0 (0.00)	1 (2.17)	7 (15.22)	35 (76.09)*	3 (6.52)	46 (14.65)
	2	6	79	214	13	314

Table 5. $P2Y_{12}$ Duration	
ACS Without a High Risk of Bleeding	
1 month	1 (0.32%)
3 months	0 (0%)
6 months	6 (1.91%)
12 months	261 (83.12%)
> 12 months	46 (14.65%)
ACS With a High Risk of Bleeding	
< 1 month	0 (0%)
1 month	18 (5.73%)
3 months	62 (19.75%)
6 months	234 (74.52%)
CCS Without a High Risk of Bleeding	
1 month	2 (0.64%)
3 months	6 (1.91%)
6 months	79 (25.16%)
12 months	214 (68.15%)
> 12 months	13 (4.14%)
CCS With a High Risk of Bleeding	
< 1 month	7 (2.23%)
1 month	74 (23.57%)
3 months	233 (74.29%)
Factors that Play a Role in Decision Making of Long-Term DAPT	
Complex Coronary Lesions/Bifurcation	290 (92.36%)
History of Stent Thrombosis	278 (88.54%)
Increased Ischemic Risk	250 (70.62%)
Multivessel Coronary Artery Disease	202 (64.33%)
Chronic Total Occlusion	150 (47.77%)

potent $P2Y_{12}$ receptor inhibitor in clopidogrel-loaded patients in the emergency department. More than 50% of participants preferred prasugrel for less than 10% of their patients.

For monotherapy after DAPT, 42.68% of the participants preferred aspirin 100 mg, 28.30% preferred clopidogrel 75 mg, 27.71% preferred aspirin 81 mg, and 0.96% preferred ticagrelor. The factors that were effective in deciding the long-term use of DAPT for the participants were complex coronary lesions (92.36%), history of stent thrombosis (88.54%), increased ischemic risk (70.62%), multivessel coronary artery disease (64.33%), and chronic total occlusion (47.77%) (Tables 4, 5).

To evaluate institution-based differences, the preference for ticagrelor by participants working in private hospitals was significantly less than in other hospitals (Public Hospitals, Training and Research Hospitals, University Hospitals, Private Hospitals; 78.95%, 72.84%, 66.18%, and 56.52%, rrespectively) (Table 6).

The preference for prasugrel in patients diagnosed with NSTE-ACS and treated by PCI was significantly high among participants working in university hospitals (Public Hospitals, Training and Research Hospitals, University Hospitals, Private Hospitals; 2.63%, 3.09%, 11.76%, and 6.52%, respectively) (Table 7).

Participants in training and research hospitals preloaded significantly more (62.96%) in NSTE-ACS patients, irrespective of the planned treatment strategy, while participants in university hospitals preloaded significantly less (48.53%). Although not statistically significant, it was observed that more preloading was done in public and private hospitals compared to university hospitals (Table 8).

Table 6. Comparison of $P2Y_{12}$ Receptor Inhibitor Treatment Preferences of Participants According to Hospitals in Patients Diagnosed with STEMI. (*): $P < 0.05$

	Prasugrel n (%)	Ticagrelor n (%)	Clopidogrel n (%)	Total n (%)
Public Hospitals	5 (13.16)	30 (78.95)*	3 (7.89)	38 (12.10)
Training and Research Hospitals	20 (12.35)	118 (72.84)	21 (14.81)	162 (51.59)
University Hospitals	11 (11)	45 (66.18)	12 (17.65)	68 (21.66)
Private Hospitals	11 (23.91)	26 (56.52)	9 (19.57)	46 (14.65)
	47	219	48	314

Table 7. Comparison of Prasugrel Preference in Patients Diagnosed with NSTE-ACS and Treated by PCI According to Institution. (*): $P < 0.05$

	Ticagrelor n (%)	Clopidogrel n (%)	Prasugrel n (%)	Total n (%)
Public Hospitals	19 (50.00)	18 (47.37)	1 (2.63)	38 (12.10)
Training and Research Hospitals	97 (59.88)	60 (37.04)	5 (3.09)	162 (51.59)
University Hospitals	33 (48.53)	27 (39.71)	8 (11.76)*	68 (21.66)
Private Hospitals	26 (56.52)	17 (36.96)	3 (6.52)	46 (14.65)
	175	219	48	314

Table 8. Comparison of Preference for Pretreatment with a Loading Dose of $P2Y_{12}$ Receptor Inhibitor Treatment According to Institution in Patients with NSTE-ACS, Irrespective of Planned Treatment Strategy. (*): *P* < 0.05

	Pretreatment (+) n (%)	Pretreatment (-) n (%)	Total - n (%)
Public Hospitals	20 (52.63)	18 (47.37)	38 (12.10)
Training and Research Hospitals	102 (62.96)*	60 (37.04)*	162 (51.59)
University Hospitals	33 (48.53)*	35 (51.47)*	68 (21.66)
Private Hospitals	24 (52.17)	22 (47.83)	46 (14.65)
	179	135	314

Discussion

The aim of this survey was to understand the preferences of cardiologists for DAPT prescriptions in Türkiye. Situations not aligned with the guidelines include the frequent use of clopidogrel in NSTE-ACS patients scheduled for non-invasive follow-up, the preference for preload treatment in more than half of NSTE-ACS patients, extending DAPT to 12 months in CCS patients with low bleeding risk, and more frequent use of ticagrelor than prasugrel in patients with NSTE-ACS.

According to the survey, the most critical parameter in $P2Y_{12}$ receptor inhibitor treatment selection is efficacy, followed by clinical experience and safety concerns. Given that stent thrombosis is a primary concern in antiaggregant therapies, it is expected that efficacy would be a significant factor in clinicians' decision-making. However, while only 10.83% of the participants stated that safety concerns influenced their decisions, 53.50% indicated they use the PRECISE-DAPT score to assess the high risk of bleeding in patients. This suggests that respondents may have underestimated safety concerns in their responses.

Clopidogrel is the most commonly used $P2Y_{12}$ receptor inhibitor, while ticagrelor and prasugrel are less preferred in patients who receive thrombolytic treatment. Despite the TREAT study's results showing ticagrelor as non-inferior to clopidogrel without increasing bleeding risk in patients receiving thrombolytic therapy, it is not the first choice among our participants.

In patients with STEMI treated with PCI, most participants prefer ticagrelor, following the guidelines. However, for patients with NSTE-ACS treated with PCI, ticagrelor is considered by just over half of the participants. According to the latest NSTE-ACS guideline, prasugrel should be preferred over ticagrelor for NSTE-ACS patients proceeding to PCI, with a class IIa recommendation. The controversial results of the ISAR-React-5 study and physicians' potential lack of access to up-to-date information may have contributed to this finding.[15] Additionally, we observed that prasugrel is more preferred in university hospitals. This preference may be related to NSTE-ACS patients being older, more fragile, having more contraindications, and a higher risk of bleeding. The less frequent use of ticagrelor in private hospitals may be attributed to financial reasons. Also, 70.70% of our participants switched to a more potent $P2Y_{12}$ inhibitor, even if previously loaded with clopidogrel. In patients scheduled for PCI with a CCS diagnosis, 94.90% of our participants prefer clopidogrel, in line with current recommendations.

Surprisingly, more than half of our participants (57.01%) consider pre-treatment in NSTE-ACS patients, contrary to guideline recommendations, irrespective of the planned treatment strategy. This unexpectedly high preload rate can be attributed to the unavoidable waiting times for NSTE-ACS patients who are not at high risk, clinical experience influencing decision-making, and the inability to keep up with current information. Additionally, the high volume and rapid intervention rate could explain the lower preload rate in training and research hospitals.

Clopidogrel is the most preferred $P2Y_{12}$ receptor inhibitor treatment in patients diagnosed with NSTE-ACS and scheduled for non-invasive treatment. Moreover, the institutions where the participants work do not seem to influence this preference. However, according to relevant guidelines, it is recommended to use a more potent $P2Y_{12}$ receptor inhibitor in patients without a high risk of bleeding, even if non-invasive treatment is preferred. In Türkiye, this situation may be related to initial clopidogrel loading in first presentations to a non-primary PCI-capable center or to insurance reimbursement rules.

In line with current guidelines, many cardiologists in Türkiye administer DAPT for 12 months in patients with ACS with a low risk of bleeding and for six months in patients with ACS with a high risk of bleeding. However, contrary to guidelines, most participants (68.15%) prefer DAPT for 12 months in patients diagnosed with CCS with a low risk of bleeding. On the other hand, in patients with CCS and a high risk of bleeding, many participants prefer DAPT for three months, in line with the guidelines. The assessment of the patient's coronary artery disease-related ischemic factors by coronary angiography may be influential in this perspective. The factors affecting participants' decisions to use DAPT for an extended period were complex coronary lesions, a history of stent thrombosis, increased ischemic risk, multivessel coronary artery disease, and chronic total occlusion.

Although current guidelines recommend a loading dose of 600 mg clopidogrel in patients with CCS scheduled for interventional therapy, only 20.70% of the participants stated that they administer a $P2Y_{12}$ receptor inhibitor loading dose. This finding indicates that effective $P2Y_{12}$ inhibition with 75 mg of clopidogrel daily until the date of elective coronary angiography is a more commonly used approach in Türkiye.

In monotherapy after DAPT, aspirin 100 mg remains the most favored antiaggregant at 42.68%, likely due to its cost-effectiveness, followed by clopidogrel at 28.30%. Aspirin 81 mg treatment does not receive as much attention and is used at almost half the rate of aspirin 100 mg. Although the HOST-EXAM study demonstrated the superiority of clopidogrel over aspirin as

monotherapy up to a 24-month follow-up, the results of our survey indicate that this evidence is not adequately reflected in clinical practice.

Limitations

The small number of participants and non-validated questions are significant limitations of our study. Since no similar studies could be found in the literature, a comparison of numbers and methods could not be made. The objectives of the survey questions do not allow for regional comparisons. However, we have included comparisons according to the characteristics of the institutions. The questionnaire included several questions related to baseline characteristics to gauge the individual experiences of the participants. However, upon completion and evaluation of the questionnaire, it was noted that a substantial proportion of participants answered these questions based on the total number of patients who applied to the institutions where they work. For this reason, only inter-institutional comparisons were made. This study consisted of approximately 80% male, middle-aged cardiologists, mainly working in secondary care facilities. Therefore, it might not fully reflect the views of tertiary centers and universities. There is also a limitation in assessing the effects of gender and age on decision-making. The inability to evaluate the experience of the participants also presents a significant limitation.

Conclusion

In this survey, which aimed to capture a snapshot of the preferences of cardiologists in Türkiye regarding DAPT treatment and duration, we found results that are both consistent with and contradictory to current guidelines. Many participants favored ticagrelor for patients with ACS treated by PCI. For patients scheduled for PCI with a CCS diagnosis, 94.90% of our participants preferred clopidogrel, in line with current recommendations. Contrary to relevant guidelines, clopidogrel was the most preferred $P2Y_{12}$ receptor inhibitor in patients diagnosed with NSTE-ACS and scheduled for non-invasive treatment, regardless of bleeding risk. Our survey revealed that more than half of the participants considered pre-treatment in NSTE-ACS patients, which goes against guideline recommendations, irrespective of the planned treatment strategy. While the duration of DAPT was primarily in line with recommendations, an unexpectedly prolonged DAPT use of 12 months was observed in CCS patients with a low risk of bleeding. For the results that conflict with the guidelines, either the recommendations should be more emphatically stated or more research should be done to determine the causes of the different preferences among cardiologists.

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