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Dear Colleagues,

I feel very excited to welcome you in the second issue of the **Journal of Cardiology & Cardiovascular Surgery**.

The second issue includes 1 original research article, 1 review article, and 3 interesting cases.

In the research article entitled “*The effect of long vacations on emergency room visits and cardiac emergencies*”, the importance of the triage system is emphasized for early detection and timely treatment of patients with cardiac emergencies during long vacation periods.

The review article entitled “*Infective endocarditis prophylaxis*” highlights the basic prevention methods from infective endocarditis in our daily life and avoidance of inappropriate antibiotic use.

In this issue, we have included three interesting case reports, which are rarely encountered, very demonstrative, and whose timely intervention is very important. The first case report entitled “*Left main coronary artery aneurysm: a rare case report*” focus on the management of left main coronary artery aneurysm by either percutaneous intervention or surgery.

The second case report “*A case of ventricular tachycardia after an earthquake*” highlights the effects of natural disasters on cardiovascular system.

In the last case report “*Iatrogenic coronary artery dissection that occurred during postpartum coronary angiography*”, the importance and tips of the management of iatrogenic left main coronary artery dissection in a patient who presented with acute coronary syndrome in the postpartum period were discussed.

We believe that these studies will contribute to the clinical practice of our colleagues in the field of cardiology/cardiovascular surgery. We are sure that we will advance to a higher level together in future, by taking into account the feedback from you and keeping science in the foreground.

Sincerely,

İbrahim Halil İNANÇ, MD

Editor-in-Chief

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The effect of long holidays on emergency department visits and cardiac emergencies

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ABSTRACT

Aims: Patients who visit the emergency department (ED) on holidays have delays in diagnosis and treatment due to a lack of personnel and equipment, and these holiday periods may result in increased morbidity and mortality. In this study, we aimed to investigate the impact of a nine-day holiday on ED admissions and admissions due to cardiac complaints in our country, Turkey.

Methods: This was a retrospective study. Patients were analyzed in 4 periods: Pre-Eid-El-Fitr, Eid-El-Fitr, pre-Eid al-Adha, and Eid al-Adha. Waiting times in the ED, the left without being seen (LWBS), consultations, admission diagnoses of cardiac patients, referral status of cardiac patients, and hospitalization were examined.

Results: The most frequent visits to the ED were on Eid al-Adha (n=6581, 40.1 %). The waiting time before the ED examination increased with the crowd, and the longest waiting time was observed during Eid al-Adha (38.09 ±51.74 min, p<0.001). LWBS rate was the highest during the Eid al-Adha (15.4%). It was observed that cardiac emergencies had shorter waiting times. Among the cardiac emergency patients, all NSTEMI patients could not be referred from the ED during the Eid al-Adha period due to the fullness of the angiography centers, and the patients were transferred to the intensive care unit when the beds became available.

Conclusion: Due to the crowded EDs during extended holiday periods, the triage system gains importance for the early detection and treatment of cardiac patients. A regular patient flow chart should be established on a provincial basis to avoid delays in the treatment process of patients needing angiography.

Keywords: LWBS, emergency department, cardiac emergency, NSTEMI

INTRODUCTION

Studies on patients who visit the emergency department (ED) on weekdays, weekends, and holidays remain popular.¹⁻⁴ Undeniably, there are negative effects on the quality of patient care when admitted to health institutions during non-working hours or extended holidays. In a nationwide cohort study on stroke patients, the holiday season effect was observed, showing that mortality was higher during the holiday period.⁵

To give an example of another disease, a study conducted with patients who visited with upper gastrointestinal bleeding during the holiday period observed that patients admitted on holidays had a lower rate of early endoscopy.⁶

If we look at the events from a cardiology view, one of the branches with which the ED communicates closely, as a result of a meta-analysis conducted in acute myocardial infarction (MI) patients, it was observed that the short and long-term mortality of patients who visited during non-working hours was higher than on weekdays.⁷ In a study of 22,727 heart failure admissions, it was observed that there were more heart failure-related hospitalizations on

Christmas and Independence Day.⁸ In another study, it was observed that out-of-hospital cardiac arrest events were more frequent during traditional holidays, and mortality was higher compared to weekdays.⁹

When we examine the data in the literature, it is observed that there are data on delayed access to investigations, prolonged access to treatments, and increased morbidity and mortality in out-of-hour admissions. In this study, we aimed to reveal the effect of long holidays on ED visits and admissions due to cardiac complaints in our country.

MATERIAL AND METHOD

Study Design and Settings

Ethical approval of the study was obtained from Muğla Sıtkı Koçman University Health Sciences Ethics Committee on 25.06.2021 with decision number 145. The study was designed retrospectively. The period between 08.05.2021 at 00:00 and 16.05.2021 at 23:59 for the Eid al-

Fitr holiday, which was officially determined as a 9-day holiday by the Republic of Turkey, and the period between 17.07.2021 at 00:00 and 25.7.2021 at 23:59 for the Eid al-Adha holiday were accepted. As a comparison group, the period between 24.04.2021 at 00:00 and 02.05.2021 at 23:59 for the Eid al-Fitr period and the period between 03.07.2021 at 00:00 and 11.07.2021 at 23:59 for the Eid al-Adha period were taken as the pre-Eid period.

The hospital where the study was conducted is the only state hospital in one of the favorite touristic destinations and is a secondary-level hospital. A total of 3 doctors work in the ED daily. Emergency services are provided by two departments as emergency surgery and emergency internal medicine.

Since there is no angiography unit in the hospital where the study was conducted, patients needing angiography are referred from the ED or clinic where they are hospitalized.

The study period was during the pandemic, and there is a separate outpatient clinic for patients with COVID-19 symptoms, and these patients receive treatment without entering the ED; patients who applied to the coronavirus infectious disease 2019 (COVID-19) pandemic outpatient clinic were not included in this study.

In addition, in April and May 2021, when the study data were collected, there was a curfew across the country except for emergencies.

Selection of the Participants

All patients admitted to emergency surgery and emergency internal medicine departments were included in the study. Only one patient group was not included in the study; patients admitted to the COVID-19 pandemic outpatient clinic.

Measurements and Outcomes

The demographic characteristics of the patients who participated in the study, hours of admission to the ED, days of admission to the ED, whether the patients were examined, waiting times for admission to the examination, whether consultation was requested from the patients, if the consultation was requested, from which department it was requested, hospitalization of the patients from the ED, hospitalization of the patients to the intensive care unit, and referral status of the patients from the ED were examined.

In the cardiology department, cardiology consultation diagnoses, cardiological patients' examination admission times, hospitalization diagnoses of cardiology patients, referral status from ED and diagnoses of patients who were referred, referral status of patients after hospitalization, and diagnoses of patients who were referred were evaluated. These data were compared before Eid al-Fitr, during Eid al-Fitr, before Eid al-Adha, and during Eid al-Adha.

Statistical Analysis

Statistical Package for the Social Sciences version 25.0 software program (SPSS, IBM, Corp.; Armonk, NY, USA) was used for data analysis in this study. Descriptive data on the sociodemographic information of the patients are given as n (%) or Mean $\pm$ SD tables. The Chi-Square test was used to compare the groups. ANOVA test was used in group analysis, and the LSD test was used in post-hoc analysis. $P < 0.05$ was considered statistically significant.

RESULTS

A total of 16416 patients were included in the study. 53.9% (n=8844) of the patients were male, and 46.1% (n=7572) were female. Considering the distribution of patients, it was observed that 40.1% (n=6581) of the patients were on vacation during the Eid al-Adha period. It was observed that 68.7% (n=11273) of the patients came to the emergency internal medicine department. It was observed that 8.9% (n=1464) of all patients did not want to wait and left without being seen (LWBS) examined. The mean waiting time for examination was 22.39 ± 37.57 minutes (**Table 1**).

Table 1. Distribution of sociodemographic and clinical information

	N	%
Gender		
Male	8844	53.9
Female	7572	46.1
Period		
Pre-Eid-El-Fitr	2281	13.9
Eid-El-Fitr	2815	17.1
Pre-Eid-Al-Adha	4739	28.9
Eid-Al-Adha	6581	40.1
Emergency Group		
Surgery	5143	31.3
Internal	11273	68.7
Admission time		
00:00-03:59	1573	9.6
04:00-07:59	757	4.6
08:00-11:59	3420	20.8
12:00-15:59	3581	21.8
16:00-19:59	3340	20.3
20:00-23:59	3745	22.8
Examination Status		
No	1464	8.9
Yes	14952	91.1
	Mean$\pm$SD	
Age, year	35.63 $\pm$ 20.81	
The day of the holiday in the ranking	5.02 $\pm$ 2.55	
Waiting time for acceptance (minute)	22.39 $\pm$ 37.57	

Table 2 shows the sociodemographic and clinical information of the patients who visited the ED in all four periods. It was observed that the number of consultation requests was higher in the period when the number of patients was low (before Eid al-Fitr: 9.9 %), while the number of consultation requests was lower in the period when the number of patients was high (Eid al-Adha: 4.6 %) (**Table 2**).

There was a statistically significant difference between the periods in waiting times for admission to the examination ($p < 0.001$). Waiting times for admission to the examination were higher during the Eid al-Adha period than during other periods. Significant differences were found between the pre-Eid al-Fitr period and Eid al-Fitr ($p = 0.004$), pre-Eid al-Adha ($p < 0.001$) and Eid al-Adha ($p < 0.001$) periods, between the Eid al-Fitr period and pre-Eid al-Adha ($p < 0.001$) and Eid al-Adha ($p < 0.001$) periods, and between pre-Eid al-Adha and Eid al-Adha periods ($p < 0.001$). A statistically significant difference was also found between the periods and the status of admission to examination ($p < 0.001$) and hospitalization ($p < 0.001$) (**Table 3**).

Table 2. Distribution of sociodemographic and clinical information according to periods									
Demographic variables		Pre-Eid-El-Fitr		Eid-El-Fitr		Pre-Eid-Al-Adha		Eid-Al-Adha	
		N	%	N	%	N	%	N	%
Age(mean)		40,97		39,47		34,17		33,13	
Waiting time for acceptance (minute, mean)		6,95		9,85		18,12		38,09	
Gender	Male	1261	55,3	1537	54,6	2606	55,0	3440	52,3
	Female	1020	44,7	1277	45,4	2132	45,0	3140	47,7
Emergency Group	Surgery	758	33,2	846	30,1	1674	35,3	1865	28,3
	Internal	1523	66,8	1969	69,9	3065	64,7	4716	71,7
Admission time	00:00-03:59	173	7,6	189	6,7	552	11,6	659	10,0
	04:00-07:59	110	4,8	147	5,2	210	4,4	290	4,4
	08:00-11:59	449	19,7	683	24,3	861	18,2	1427	21,7
	12:00-15:59	583	25,6	749	26,6	876	18,5	1373	20,9
	16:00-19:59	502	22,0	496	17,6	1016	21,4	1326	20,1
	20:00-23:59	464	20,3	551	19,6	1224	25,8	1506	22,9
Examination Status	No	68	3,0	78	2,8	307	6,5	1011	15,4
	Yes	2213	97,0	2737	97,2	4432	93,5	5570	84,6
Consultation requested status	No	1993	90,1	2516	91,9	4176	94,2	5313	95,4
	Yes	220	9,9	221	8,1	256	5,8	257	4,6
Internal medicine	No	2183	98,6	2710	99,0	4382	98,9	5544	99,5
	Yes	30	1,4	27	1,0	50	1,1	26	0,5
Chest diseases	No	2213	100,0	2737	100,0	4428	99,9	5570	100
	Yes	0	0,0	0	0,0	4	0,1	0	0,0
Infectious diseases	No	2182	98,6	2725	99,6	4416	99,6	5542	99,5
	Yes	31	1,4	12	,4	16	,4	28	0,5
Cardiology	No	2190	99,0	2708	98,9	4407	99,4	5549	99,6
	Yes	23	1,0	29	1,1	25	,6	21	0,4
Pediatrics	No	2201	99,5	2727	99,6	4423	99,8	5556	99,7
	Yes	12	0,5	10	0,4	9	0,2	14	0,3
Neurology	No	2195	99,2	2726	99,6	4409	99,5	5538	99,4
	Yes	18	0,8	11	0,4	23	0,5	32	0,6
Neurosurgery	No	2208	99,8	2729	99,7	4415	99,6	5556	99,7
	Yes	5	0,2	8	0,3	17	0,4	14	0,3
General Surgery	No	2201	99,5	2721	99,4	4417	99,7	5548	99,6
	Yes	12	0,5	16	0,6	15	0,3	22	0,4
Pediatric surgery	No	2208	99,8	2736	99,9	4431	99,9	5570	100
	Yes	5	0,2	1	0,1	1	0,1	0	0,0
Orthopedics	No	2174	98,2	2707	98,9	4392	99,1	5528	99,2
	Yes	39	1,8	30	1,1	40	0,9	42	0,8
Obstetrics and Gynecology	No	2178	98,4	2666	97,4	4384	98,9	5507	98,9
	Yes	35	1,6	71	2,6	48	1,1	63	1,1
Eye diseases	No	2208	99,8	2733	99,9	4419	99,7	5566	99,9
	Yes	5	0,2	4	0,1	13	0,3	4	0,1
Urology	No	2208	99,8	2735	99,9	4429	99,9	5569	99,9
	Yes	5	0,2	2	0,1	3	0,1	1	0,1
Oncology	No	2209	99,8	2734	99,9	4430	99,9	5564	99,9
	Yes	4	0,2	3	0,1	2	0,1	6	0,1
Cardiovascular surgery	No	2211	99,9	2737	100,0	4429	99,9	5570	100
	Yes	2	0,1	0	0,0	3	,1	0	0,0
Psychiatry	No	2212	99,9	2737	100,0	4431	99,9	5570	100
	Yes	1	0,1	0	0,0	1	0,1	0	0,0
Ear, nose, and throat department	No	2211	99,9	2735	99,9	4428	99,9	5567	99,9
	Yes	2	0,1	2	0,1	4	0,1	3	0,1
Thoracic surgery	No	2213	100,0	2737	100,0	4431	99,9	5570	100
	Yes	0	0,0	0	0,0	1	,1	0	0,0
Anesthesia	No	2213	100,0	2736	99,9	4432	100	5570	100
	Yes	0	0,0	1	0,1	0	0,0	0	0,0
Hospitalization status	No	2099	94,8	2631	96,1	4315	97,4	5413	97,2
	Yes	114	5,2	106	3,9	117	2,6	157	2,8
Inpatient clinic	,00	2099	94,8	2631	96,1	4315	97,4	5413	97,2
	Internal medicine	15	,7	17	,6	33	,7	20	,4
	Infectious diseases	1	,0	1	,0	2	,0	4	,1
	Cardiology	7	,3	8	,3	5	,1	9	,2
	Pediatrics	4	,2	4	,1	6	,1	8	,1
	Neurology	8	,4	6	,2	8	,2	17	,3
	Neurosurgery	1	,0	4	,1	6	,1	9	,2
	General Surgery	7	,3	10	,4	9	,2	13	,2
	Pediatric surgery	1	,0	0	,0	0	,0	0	,0
	Orthopedics	20	,9	21	,8	16	,4	21	,4
	Obstetrics and Gynecology	18	,8	22	,8	11	,2	24	,4
	Urology	2	,1	0	,0	0	,0	1	,0
	Pandemic	27	1,2	10	,4	15	,3	23	,4
	Oncology	3	,1	2	,1	3	,1	5	,1
	Anesthesia	0	,0	1	,0	0	,0	0	,0
	Chest diseases	0	,0	0	,0	1	,0	0	,0
	Eye diseases	0	,0	0	,0	1	,0	0	,0
	Thoracic surgery	0	,0	0	,0	1	,0	2	,0
	Ear, nose, and throat department	0	,0	0	,0	0	,0	1	,0
Intensive care unit hospitalization	No	2204	99,6	2728	99,7	4421	99,8	5551	99,7
	Yes	9	,4	9	,3	11	,2	19	,3
Referral from the emergency department	No	2197	99,3	2714	99,2	4415	99,6	5555	99,7
	Yes	16	,7	23	,8	17	,4	15	,3
Cardiology diagnosis	,00	2197	99,3	2724	99,5	4418	99,7	5558	99,8
	STEMI	4	,2	2	,1	5	,1	3	,1
	NSTEMI	4	,2	2	,1	4	,1	4	,1
	UA	2	,1	3	,1	1	,0	0	,0
	HF	5	,2	6	,2	1	,0	3	,1
	AF	1	,0	0	,0	1	,0	2	,0
	HT	0	,0	0	,0	1	,0	0	,0
	Coagulation disorder	0	,0	0	,0	1	,0	0	,0
Need for angiography	No	2204	99,6	2729	99,7	4422	99,8	5563	99,9
	Yes	9	0,4	8	0,3	10	0,2	7	0,1
Referral status during hospitalization	No	2210	99,9	2733	99,9	4431	99,9	5565	99,9
	Yes	3	0,1	4	0,1	1	0,1	5	0,1
STEMI: ST-elevation myocardial infarction, NSTEMI: Non-ST-elevation myocardial infarction, UA: Unstable angina, HF: Heart Failure, AF: Atrial fibrillation, HT: Hypertension.									

STEMI: ST-elevation myocardial infarction, NSTEMI: Non-ST-elevation myocardial infarction, UA: Unstable angina, HF: Heart Failure, AF: Atrial fibrillation, HT: Hypertension.

Table 3: Comparison of various parameters by periods

Parameters	Period				p	Post-hoc
	¹ Pre-Eid-El-Fitr	² Eid-El-Fitr	³ Pre-Eid-Al-Adha	⁴ Eid-Al-Adha		
Waiting time for acceptance (minute), Mean±SD	6,95±9,40	9,85±19,99	18,12±23,72	38,09±51,75	<0.001	1-2,3,4 2-3,4 3-4
Examination Status, n (%)						
No	68 (4,6)	78 (5,3)	307 (21,0)	1011 (69,1)	<0.001	1-3,4 2-3,4 3-4
Yes	2213 (14,8)	2737 (18,3)	4432 (29,6)	5570 (37,3)		
Hospitalization, n (%)						
No	2099 (14,5)	2631 (18,2)	4315 (29,8)	5413 (37,4)	<0.001	1-2,3,4 2-3,4
Yes	114 (23,1)	106 (21,5)	117 (23,7)	157 (31,8)		
Hospitalization in the intensive care unit, n (%)						
No	2204 (14,8)	2728 (18,3)	4421 (29,7)	5551 (37,2)	0.725	-
Yes	9 (18,8)	9 (18,8)	11 (22,9)	19 (39,6)		

Mean±SD; ANOVA test, Post-Hoc: LSD test, n (%): Chi-Square test, p<0.05 statistically significant.

Waiting times for admission to the examination showed a statistically significant difference between the patients who were asked for consultation and those who were not (p<0.001). Waiting times for admission to the examination were higher in unordered patients than in patients in whom consultation was requested (Table 4).

Table 4: Comparison of consultation request status and waiting time for admission

	Consultation		P
	No N=13998	Yes N=954	
Waiting time for acceptance (minute),	23,29±38,25	9,21±21,82	<0.001

Independent t-test, p<0.05 statistically significant.

From the cardiology side, it was observed that the waiting time of patients who requested cardiology consultation was 3.95±4.17 minutes in the pre- Eid al-Fitr period and 17.09±39.22 minutes in the Eid al-Adha period (Table 5).

When we look at the patients hospitalized in the cardiology clinic according to the periods, it is observed that the highest number of hospitalizations was during Eid al-Adha (9, 31.1%). When the intensive care hospitalizations of the patients in the periods are analyzed, it is observed that the intensive care hospitalization was higher during the Eid al-Adha period (50%). The cardiology department hospitalized 29 patients, and 8 of them were admitted to the intensive care unit. It was observed that the diagnosis of non-ST-elevation myocardial infarction (NSTEMI) was high among the hospitalization diagnoses during the Eid al-Adha period (44.4%, 4)(Table 6).

Table 5: Distribution of various parameters according to periods in patients in whom cardiology consultation was requested (n=98).

Parameters	Period			
	Pre-Eid-El-Fitr N=23	Eid-El-Fitr N=29	Pre-Eid-Al-Adha N=25	Eid-Al-Adha N=21
Waiting time for acceptance (minute), Mean±SD	3,95±4,17	8,03±8,27	5,84±10,94	17,09±39,22
Referral from the emergency department, n (%)				
No	15 (65,2)	23 (79,3)	26 (64,0)	18 (85,7)
Yes	8 (34,8)	6 (20,7)	9 (36,09)	3 (14,3)
Referral status during hospitalization, n (%)				
No	21 (91,3)	26 (89,7)	24 (96,0)	17 (81,0)
Yes	2 (8,7)	3 (10,3)	1 (4,0)	4 (19,0)
Cardiology diagnosis n (%)				
No	7 (30,4)	16 (55,2)	11 (44,0)	9 (42,9)
STEMI	4 (17,4)	2 (6,9)	5 (20,0)	3 (14,3)
NSTEMI	4 (17,4)	2 (6,9)	4 (16,0)	4 (19,0)
UA	2 (8,7)	3 (10,3)	1 (4,0)	0 (0,0)
HF	5 (21,7)	6 (20,7)	1 (4,0)	3 (14,3)
AF	1 84,3)	0 (0,0)	1 (4,0)	2 (9,5)
HT	0 (0,0)	0 (0,0)	1 (4,0)	0 (0,0)
Coagulation disorder	0 (0,0)	0 (0,0)	1 (4,0)	0 (0,0)

STEMI: ST-elevation myocardial infarction, NSTEMI: Non-ST-elevation myocardial infarction, UA: Unstable angina, HF: Heart Failure, AF: Atrial fibrillation, HT: Hypertension.

Table 6: Analysis of patients hospitalized in the cardiology clinic according to periods (n=29)

Parametreler	Period			
	Pre-Eid-El-Fitr	Eid-El-Fitr	Pre-Eid-Al-Adha	Eid-Al-Adha
Admitted to the cardiology clinic, n (%)	7 (24,2)	8 (27,6)	5 (17,1)	9 (31,1)
Inpatient in the intensive care unit in the name of cardiology, n (%)	1 (12,5)	1 (12,5)	2 (25,0)	4 (50,0)
Diagnoses of patients admitted to the cardiology department, n (%)				
STEMI	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)
NSTEMI	0 (0,0)	0 (0,0)	1 (20,0)	4 (44,5)
UA	2 (28,58)	2 (25,0)	0 (0,0)	0 (0,0)
HF	5 (71,42)	6 (75,0)	1 (20,0)	3 (33,3)
AF	0 (0,0)	0 (0,0)	1 (20,0)	2 (22,2)
HT	0 (0,0)	0 (0,0)	1 (20,0)	0 (0,0)
Coagulation disorder	0 (0,0)	0 (0,0)	1 (20,0)	0 (0,0)

STEMI: ST-elevation myocardial infarction, NSTEMI: Non-ST-elevation myocardial infarction, UA: Unstable angina, HF: Heart Failure, AF: Atrial fibrillation, HT: Hypertension.

It was observed that the most common diagnosis of patients for whom cardiology consultation was requested and who were referred from the ED was ST-elevation myocardial infarction (STEMI) (Pre- Eid-El-Fitr: 50%, Eid-El-Fitr: 33.3%, pre-Eid-El-Adha: 55.6%, Eid-El-Adha 100%)(Table 7). The most common reason for referral after hospitalization was unstable angina (UA) (pre-Eid-El-Fitr: 100%, Eid-el-Fitr: 66.7%) before and during Eid al-Fitr and NSTEMI (pre-Eid-al-Adha: 100%, Eid-El-Adha: 100%) before and during Eid al-Adha (Table 7).

Table 7: Distribution of cardiology diagnoses according to the periods of referral from emergency and during hospitalization in patients for whom cardiology consultation was requested

Parameter	Period			
	Pre-Eid-El-Fitr	Eid-El-Fitr	Pre-Eid-Al-Adha	Eid-Al-Adha
Cardiology diagnoses of patients referred from the emergency department, n (%) (n=26)				
STEMI	4 (50,0)	2 (33,3)	5 (55,6)	3 (100,0)
NSTEMI	4 (50,0)	2 (33,3)	3 (33,3)	0 (0,0)
UA	0 (0,0)	1 (16,7)	1 (11,1)	0 (0,0)
HF	0 (0,0)	1 (16,7)	0 (0,0)	0 (0,0)
AF	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)
HT	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)
Coagulation disorder	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)
Cardiology diagnoses of patients referred during hospitalization, n (%) (n=10)				
STEMI	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)
NSTEMI	0 (0,0)	0 (0,0)	1 (100,0)	4 (100,0)
UA	2 (100,0)	2 (66,7)	0 (0,0)	0 (0,0)
HF	0 (0,0)	1 (33,3)	0 (0,0)	0 (0,0)
AF	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)
HT	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)
Coagulation disorder	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)

STEMI: ST-elevation myocardial infarction, NSTEMI: Non-ST-elevation myocardial infarction, UA: Unstable angina, HF: Heart Failure, AF: Atrial fibrillation, HT: Hypertension.

DISCUSSION

Our study observed that the highest number of patients visited during the Eid al-Adha period. It was found that the waiting time for examination was higher during the Eid al-Adha period, when the number of patients was higher, and the situation of LWBS was higher. It was observed that consultation was requested less during the Eid al-Adha period when the number of patients was high, and more consultation was requested during the Eid al-Fitr period, when the number of patients was low. It was observed that the waiting time for examination was shorter for patients who needed consultation.

Notably, the rate of referral of NSTEMI patients from the ED decreased during the period of high cardiac patient density, and they were referred after the bed became available in inpatient angiography centers.

One of the most striking findings of our study is the LWBS rate, which is one of the indicators of ED quality. The LWBS rate is not a constant value but varies between days during the week and hours during the day.¹⁰ A study of patients leaving the hospital in Canada observed that the appropriate, acceptable waiting time by patients was 1-2 hours.¹¹ In our study, it was observed that during the Eid al-Adha period, when the number of patients was high, the waiting times of the patients for examination were shorter than the waiting times recommended in the literature but longer than the other periods we compared

and 15.4% of the patients left without being examined. In our hospital, where patients are cared for according to the triage system in the ED, the fact that LWBS patients may be since they do not consider themselves as patients and give up. In addition, when the patients with long waiting times were examined, it was observed that some patients who were admitted to re-prescribed their chronic medications.

When we examine the patients who need consultation, we see that patients who need consultation wait less time to be admitted to the examination. these data are consistent with a study conducted in our country by Ataman et al.¹² This shows that our triage methods applied in our country are effective and that relatively severe patients who may be complicated and require specialization are kept on time.

During the Eid al-Adha period, it is generally observed that untrained people have more extremity injuries due to animal slaughter.¹³ In our study, we expected that the number of admissions to emergency surgery would be higher during the sacrifice feast period. Still, when we analyzed the results, we observed no significant difference. One of the reasons for this may be that the study was conducted in a region with a high socioeconomic and educational level and experienced people performed animal slaughter.

When we examined the patients from the cardiac point of view, it was observed that there was no significant difference between the consultation requests between the periods. It was observed that the waiting times of patients for whom cardiology consultation was requested were shorter than others in each period. This may be because patients with cardiac complaints usually arrive by ambulance and enter without waiting, and the triage method is used.

In our center, which is not an angiography center, it is observed that all STEMI patients are referred from the ED in every period. During the Eid al-Adha period, when the patient population was high, it was observed that NSTEMI patients were admitted to the general intensive care unit in the hospital due to the lack of available beds in the centers where angiography was performed and followed up for up to 48 hours and referred when a bed became available. ESC guidelines recommend immediate invasive (<2 h) if NST-ACS patients are in the very high-risk group, early invasive (<24 h) in the high-risk group, and selective invasive approach in low-risk patients.¹⁴ Due to the overcrowding of angiography centers in our province during the Eid al-Adha period, it is observed that there is a prolongation in our waiting times, according to the literature. This problem can be solved by increasing the number of angiography centers in our province or beds in angiography centers.

It is observed that one of the patients consulted to the cardiovascular surgery department was consulted for aortic dissection, and the remaining patients were consulted for dialysis catheterization. This may be because surgical operations are not performed in our hospital.

Our study has several limitations. These limitations include the duration of the patient's stay in the ED, not knowing whether the patients were admitted to the ED directly or by ambulance, not knowing the mortality status of the patients in the follow-up, and not knowing the time of angiography in the referral center.

CONCLUSION

The number of patients visiting the ED increases during extended holidays. Although the high rate of LWBS during the Eid al-Adha period draws attention, the fact that serious diseases wait less for examination shows that the triage system applied is beneficial. To reduce the LWBS rate, new assessment methods can be developed to reduce the number of patients.

From a cardiac point of view, it was observed that patients had shorter waiting times despite crowded ED. It is observed that there is a delay in the treatment process of NSTEMI patients due to the fullness of angiography centers during the Eid al-Adha period. In this regard, studies can be conducted to increase the bed capacity of angiography units and the number of angiography centers in the city.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was approved by the Muğla Sıtkı Koçman University Health Sciences Ethics Committee (Date: 25.06.2021, Decision No:145).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Infective endocarditis prophylaxis

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ABSTRACT

Infective endocarditis is a serious infectious disease that has a mortality rate of 30% in the first year in our country. Today in the majority of cases, infective endocarditis is thought to develop after transient bacteremia of bacteria in the oral microbiota during daily procedures such as toothbrushing. Good oral hygiene and dental care are more effective than antibiotic prophylaxis. In recent guidelines, antibiotic prophylaxis is recommended for the high-risk group for the development of infective endocarditis and dental procedures with bleeding.

Keywords: Infective endocarditis, prophylaxis, dental procedures

INTRODUCTION

Infective endocarditis is a life-threatening infection that has high morbidity and mortality rates. The first-year mortality rate is around %30.¹ There are 3 to 10 cases of infective endocarditis per 100,000 people annually.^{2,3} This rate increases in individuals who have predisposing cardiac pathologies, and they become highly at risk of infective endocarditis.⁴ Infective endocarditis occurs most commonly when bacteria settle into thrombi on the heart valves during transient bacteraemias. Antimicrobial prophylaxis measures have been developed with the idea that inhibiting or early treating transient bacteraemias may prevent the development of infective endocarditis.⁵

INFECTIVE ENDOCARDITIS PROPHYLAXIS

The American Society of Cardiology (AHA) published a guideline in 2007 that differs significantly from the previous nine guidelines for the practices of infective endocarditis prophylaxis.⁶ Afterward, the European Society of Cardiology (ESC) guidelines restricted antibiotic prophylaxis to be given to high-risk patients in 2009. Endocarditis due to viridans streptococci is the result of short-term bacteremia occurring during daily routine practices such as toothbrushing, flossing, or chewing, particularly in patients with poor oral hygiene rather than dental procedures.⁷⁻⁹ English translation. The expected risk during dental procedures is very low. Therefore, even if the prophylaxis is 100% effective, very few cases of infective endocarditis due to viridans streptococci can be prevented with antibiotic prophylaxis for dental procedures. While it is estimated that one case of infective endocarditis is prevented by applying antibiotic prophylaxis in 150,000 dental procedures, it is believed that one case of infective endocarditis occurs in 46,000 cases where antibiotic prophylaxis is not used.¹⁰

Even if there is an underlying heart disease, it poses a lifelong risk for the development of viridans streptococci-related endocarditis; therefore, antibiotic prophylaxis is not considered a primary prevention measure. Ensuring and maintaining good oral hygiene and regular dental care is much more important in preventing infective endocarditis due to viridans streptococci during dental procedures than the antibiotic prophylaxis given for this purpose, as it reduces the risk of gingivitis and periodontitis as well.⁶

Although the risk of fatal anaphylaxis is considered very low in conjunction with the use of oral amoxicillin, the importance of this risk increases with the widespread use of antibiotics.^{7,11} In addition, the prevalent use of antibiotics brings with it the problem of resistance to microorganisms.¹² Hence, the use of antibiotic prophylaxis for infective endocarditis is recommended only in appropriate dental procedures in high-risk patients, given all these circumstances. After this major change made in 2007, many studies have evaluated whether there is a change in the incidence and mortality of infective endocarditis in patients with or without delivered prophylaxis in dental procedures. There are no prospective randomized controlled studies in this regard. In published reviews, it has been stated that there are no randomized controlled studies that provide clear evidence to support or negate the need for antibiotic prophylaxis before dental procedures.¹³⁻¹⁵

The highest-risk cardiac conditions are divided into four groups, and infective endocarditis prophylaxis is recommended for these groups.^{7,16}

Group 1: Prosthetic heart valve, use of prosthetic material for cardiac valve repair or cardiac device implantation, like transcatheter aortic valve implantation

While the mortality rate in natural valve endocarditis is ≤5%, this rate is ≥20% in prosthetic valve endocarditis.

Moreover, complications such as heart block and heart failure develop more frequently in prosthetic valve endocarditis than in natural valve endocarditis. Additionally, cardiac valve replacement may be necessary due to perivalvular separation, abscess, and other complications.

Group 2: Having a previous history of infective endocarditis

Relapsed or recurrent endocarditis increases the risk of heart failure in patients who have a history of infective endocarditis, and these patients may require cardiac valve replacement surgery.

Group 3: Congenital heart disease

In the case of cyanotic congenital heart disease that has not undergone surgical repair, or in any congenital heart disease, prophylaxis is recommended for up to 6 months when repaired with prosthetic material placed by surgical or percutaneous technique; or for lifetime prophylaxis is recommended if residual shunt and/or regurgitation continues.

Group 4: Heart transplant recipients with developed valvulopathy

Although there is not enough data, antibiotic prophylaxis is recommended because these patients who are immunosuppressive and have many underlying comorbidities may result in substantial risk and a fatal course in a case of an infection such as infective endocarditis. However, this group is not included in the group that should receive prophylaxis in the 2015 ESC guideline.⁷ The other three groups are similar in the ESC and AHA guidelines.

DENTAL PROCEDURES

Dental Procedures for which Antibiotic Prophylaxis is Recommended⁶

- Oral mucosal perforation
- All dental procedures that involve the gingival and periapical regions

Dental Procedures for which Antibiotic Prophylaxis is not Recommended⁶

- Anaesthetization to non-infected tissues
- Dental radiography
- Placement of removable prosthesis or orthodontic appliances
- Adjustment and placement of orthodontic appliances
- Shedding of deciduous teeth
- Bleeding in oral mucosa or lips because of trauma.

NON-DENTAL PROCEDURES

Otolaryngology Procedures

Antibiotic prophylaxis is not recommended for tonsillectomy. The patient at risk of infective endocarditis does not have a proven antimicrobial prophylaxis. Although there is no consensus among authors, the use of an agent that is effective against oral microbiota is recommended by a large portion of them in high-risk patients for infective endocarditis, as there may be a considerable amount of bacteremia during tonsillectomy. Yet, this is an expert opinion, not a guideline recommendation.¹⁶

Respiratory System Procedures

Antibiotic prophylaxis is not recommended for bronchoscopy, laryngoscopy, transnasal or endotracheal intubation. An antibiotic with anti-staphylococcal activity can be empirically used in invasive procedures used in the treatment of infections, such as abscess drainage.¹⁶

Gastrointestinal/Genitourinary Procedures

Antibiotic prophylaxis is not recommended for gastroscopy, colonoscopy, low-risk laparoscopic procedures in the biliary tract, cystoscopy, vaginal delivery, cesarean section, or transesophageal echocardiography. An antibiotic with proven efficacy against enterococci should be empirically used if the patient has a proven infection.¹⁶

Skin and Soft Tissue Procedures

Antibiotic prophylaxis is not recommended.¹⁶

Cardiac or Vascular Interventions

Staphylococcus aureus nasal carriage should be investigated before elective cardiac surgery to treat carriers. Systemic or local treatment is not recommended without investigating the carrier status. If there is a potential focus, such as dental, it should be treated at least two weeks before the procedure. Perioperative antibiotic prophylaxis is recommended for pacemaker or intracardiac defibrillator placement. Perioperative antibiotic prophylaxis is recommended for patients who will receive foreign material through surgical or trans-catheter implantation such as a prosthetic valve, intravascular prosthetic device, or graft placement for endovascular aneurysm repair. Prophylaxis should be started before the procedure, repeated if the procedure is to be prolonged, and not extended for over 48 hours.¹⁶

Antibiotics and their doses used in infective endocarditis prophylaxis are stated in the table. Clindamycin is no longer recommended for prophylaxis in dental procedures. Compared to other antibiotics, it causes more frequent and serious adverse reactions. The study shows that the incidence of fatal and non-fatal adverse drug reactions was found to be 0 and 23 per million with amoxicillin, respectively, while these rates were 13 and 149 per million in terms of clindamycin, respectively.^{16,17} *Clostridioides difficile* infection is the most common part of the serious drug reactions that may develop due to clindamycin. Prophylaxis should be given 30-60 minutes before the procedure. If prophylaxis cannot be given for any reason before the dental intervention, it can be given up to two hours after the procedure. If the patient is receiving a parenteral antibiotic effective against viridans streptococci when an invasive dental or oral procedure is to be performed, this parenteral antibiotic is continued to be given.⁶

CONCLUSION

Almost everyone is exposed to dental and gingival interventions at some point in their life. In some people, these procedures may be a risk for infective endocarditis. This situation should be aware of and necessary precautions should be taken to avoid more important problems.

Table. Antibiotics and their doses used in the prophylaxis of infective endocarditis

	Adult	Child
Primary regimen	Amoxicillin 2 g PO 30-60 min ago	Amoxicillin 50 mg/kg PO 30-60 min ago
No oral intake	Ampicillin 2 g IV/IM or Cefazolin 1 g IV/IM or Ceftriaxone 1 g IV/IM 30-60 min ago	Ampicillin 50 mg/kg IV/IM or Cefazolin 50 mg/kg IV/IM or Ceftriaxone 50 mg/kg IV/IM 30-60 min ago
Allergy to penicillin/ampicillin	Cephalexin * 2 g PO or Azithromycin/clarithromycin 500 mg PO or Doxycycline 100 mg PO 30-60 min ago	Cephalexin * 50 mg/kg PO or Azithromycin/Clarithromycin 500 mg PO or Doxycycline ≤45 kg 2,2 mg/kg > 45 kg 100 mg, 30-60 min ago
Allergy to penicillin/ampicillin and no oral intake	Cefazolin *1 g IV/IM or Ceftriaxone * 1 g 30-60 min ago	Cefazolin * 50 mg/kg IV/IM or Ceftriaxone 50 mg/kg IV/IM 30-60 min ago

Clindamycin is no longer recommended for infective endocarditis prophylaxis in dental interventions.

* Cephalosporins should not be used if there is a history of angioedema and anaphylaxis with penicillin or ampicillin.

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Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Left main coronary artery aneurysm: a rare case report

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ABSTRACT

Left main coronary artery (LMCA) aneurysm is a rare condition and the treatment strategy has not been fully determined. Although usually asymptomatic, myocardial ischemia or infarction may develop or rupture. Antiaggregant therapy should be given to prevent thrombus formation. In appropriate cases, percutaneous methods or surgical strategies can be successfully applied, especially in the case of concomitant coronary artery disease (CAD). We present a case of coronary artery bypass graft performed on a patient with concurrent critical CAD with an aneurysm distal to the LMCA and proximal to the left anterior descending artery.

Keywords: Left main coronary artery, coronary artery aneurysm, coronary artery bypass graft

INTRODUCTION

Coronary artery aneurysms (CAA) are a rare anatomical disorder in which dilation of the coronary arteries to 1.5 times their normal size is seen.¹ The incidence of CAA is approximately 0.15%-4.9%, and involvement of the left main coronary artery (LCMA) is rarer and the right coronary artery (RCA) is most frequently affected.² They are usually asymptomatic and are detected during coronary angiography (CAG), intravascular ultrasonography (IVUS), or computed tomography (CT) for cardiac investigation. In symptomatic patients, myocardial ischemia or infarction may develop or rupture.³ Due to the lack of randomized controlled trials, there is no clear consensus on the treatment strategy. Surgical strategies such as resection, reconstruction, or coronary artery bypass graft (CABG) have been reported in addition to medical treatment and percutaneous interventions.⁴ In this case report, we present a case of CABG performed on a patient with concurrent critical coronary artery disease (CAD) with an aneurysm distal to the LMCA and proximal to the left anterior descending artery (LAD).

CASE

A 41-year-old (82 kg) male patient applied to our clinic with complaints of chest pain for the last 3 months. His vital signs were stable, and no pathology was found in his history and laboratory parameters. CAG and coronary computed tomographic angiography (CTA) revealed giant aneurysms distal to the LMCA and proximal to the left anterior descending artery (LAD), and extensive coronary artery disease (**Figure 1, 2**). As a result of transthoracic

echocardiography (TTE), the ejection fraction (EF) was 45% and no significant valve pathology was detected. The patient was evaluated multidisciplinary by the heart team and it was decided to perform a coronary artery bypass graft (CABG). After the median sternotomy, a bypass was performed on the LAD and obtuse marginal (OM) arteries using the left internal mammary artery (LIMA) and saphenous vein grafts. The intermediary artery and right coronary artery were evaluated intraoperatively and were not found suitable for anastomosis. The aneurysmatic segment, on the other hand, was found to be stable, not ruptured, and no thrombotic focus was detected. Cross clamp time was 71 minutes and cardiopulmonary bypass time was 89 minutes. After the operation, there was a total drainage of 300 ml. A total of 1 unit of erythrocyte suspension was used. He was discharged from the intensive care unit on the 2nd postoperative day and was discharged with acetylsalicylic acid 100 mg and atorvastatin 40 mg on the 5th day without any complications. There were no complications in the follow-up of the 1st month postoperatively.

DISCUSSION

CAA is defined as a coronary artery diameter greater than 50% or 1.5 times the reference diameter.⁵ It is most commonly seen in RCA, followed by the left circumflex artery (LCx), and LAD, and rarely in LMCA.⁶ While the most common cause in adults is atherosclerosis, the most common cause in children and adolescents is Kawasaki disease.¹ It also develops due to trauma, congenital diseases, connective tissue diseases, and some vasculitides.⁷

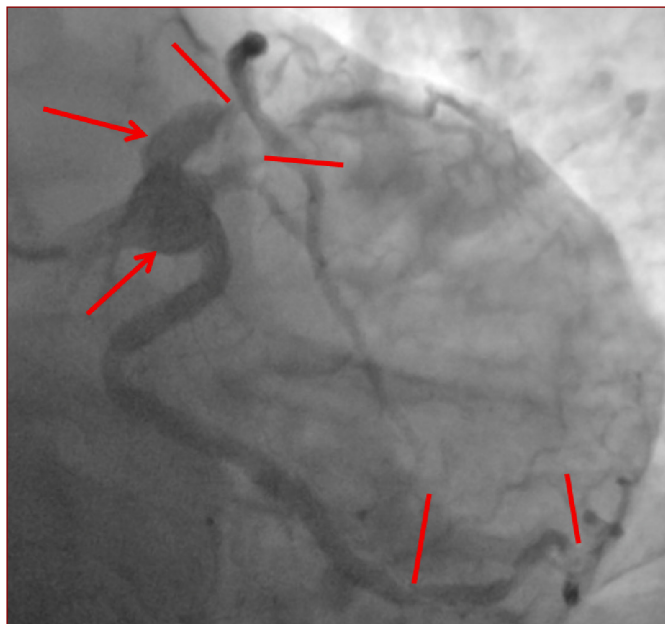


Figure 1. Coronary angiography image. Arrows indicate the aneurysm distal to the left main coronary artery and proximal to the left anterior descending artery. Lines show 80% stenosis after the aneurysmatic segment in the left anterior descending artery, 99% stenosis in the intermediate artery, and 60% and 50% stenosis in the left circumflex artery.

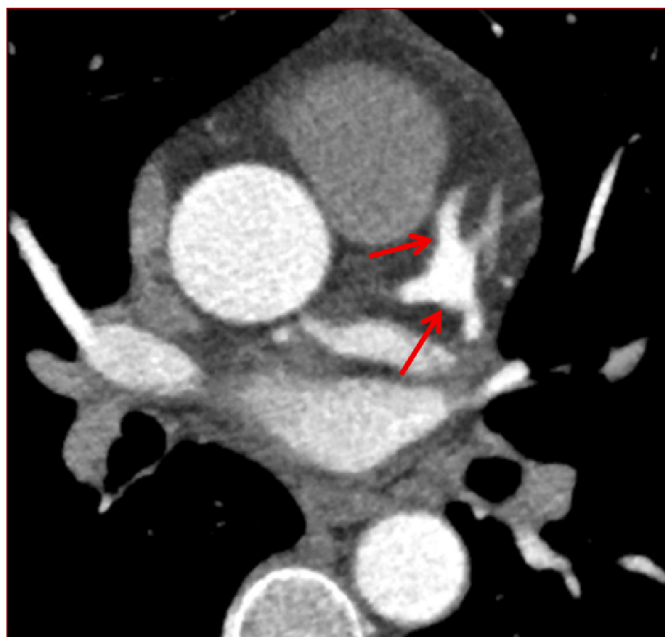


Figure 2. Coronary computed tomographic angiography image. Arrows indicate the aneurysm distal to the left main coronary artery and proximal to the left anterior descending artery.

While CAA can be detected by non-invasive methods such as TTE, CT, and magnetic resonance (MR) imaging, CAG is one of the best methods in terms of better evaluation of anatomy and pathology. However, the disadvantages of CAG are that it only evaluates the blood flow in the lumen, does not provide sufficient information about the vessel wall, and cannot be accurately measured due to occlusion of the aneurysm due to thrombus or plaque.² Therefore, in addition to CAG, CTA also plays an important role in diagnosis. In addition to CAG performed in our patient, CTA images also supported the diagnosis and evaluated additional pathologies.

They are usually asymptomatic and detected incidentally. The most common symptom is chest pain. Thrombosis and embolism may be seen due to the deteriorated flow characteristic in the aneurysm. As a result, myocardial infarction may occur. Rupture is rare, but if it develops, it can cause cardiac tamponade.

It can also cause arrhythmias by compressing adjacent heart structures such as the right atrium and right ventricle. It can cause sudden death. The presence of CAA is associated with poor long-term prognosis independent of coronary artery disease.³ In our case, we present a successful CABG operation performed on a patient who presented with chest pain and was found to have an aneurysm in the LMCA and LAD in the CAG and with accompanying critical CAD.

Since there is no known randomized controlled study on this subject in the literature, there is no clear recommendation for treatment in the guidelines. Findings of case reports are important for recommendations. Therefore, this article will contribute to the literature. The type, size, and location of the CAA, the patient's symptoms should be evaluated and the treatment should be individualized. Many methods have been described as medical treatment, percutaneous treatment, and surgical treatment. As a conservative treatment, it is recommended to give antiaggregant and anticoagulant therapy, especially to prevent thrombotic complications.⁸ In addition, the use of statins is recommended due to their pleiotropic effects.³ Similar to these recommendations, we discharged our patient with acetylsalicylic acid and atorvastatin, and we did not experience any complications during the follow-up. It is suggested that last-generation drug-eluting stents (DES) can be preferred as percutaneous treatment.⁹ Percutaneous application of polytetrafluoroethylene (PTFE)-coated stents can limit the expansion of the CAA and prevent rupture.² In the literature, some methods such as reconstruction, resection, or isolation with concomitant CABG have been described as a surgical strategy.⁴ CABG can be performed when necessary by opening the aneurysm, and suturing the afferent and efferent vessels.¹⁰ In terms of surgery, Singh et al.¹¹ reported good results with proximal ligation and plication of the aneurysm with coronary artery bypass grafting. In our case, we did not intervene in CAA because CAA was not large, had no thrombotic findings, and was stable. However, we decided to perform CABG because the patient had chest pain and accompanying CAD. Then we arranged his medical treatment and discharged him. We follow our patient closely to investigate whether the existing CAA is growing. If growth is detected during the follow-up period, percutaneous intervention or surgery will be re-evaluated.

The fact that there are not many studies on this subject in the literature causes the lack of strong recommendations in international guidelines. Due to their rarity, there are not enough studies with large patient numbers. For this reason, future studies with more numbers will be extremely important in terms of providing guideline information on this subject. Like this article, case reports are also important in terms of comparing different treatment methods and bringing successful results to the literature. In addition, we think that prospective studies to be conducted on how conservatively followed patients will progress in the future will provide invaluable information on this issue.

CONCLUSION

LMCA aneurysm is a rare condition and the treatment strategy has not been fully determined. Antiaggregant therapy should be given to prevent thrombus formation. In appropriate cases, percutaneous methods or surgical strategies can be successfully applied, especially in the case of concomitant coronary artery disease (CAD). However, studies that will provide sufficient evidence for guidelines for optimal management of this issue are needed.

ETHICAL DECLARATIONS

Informed Consent: All patients signed the free and informed consent form.

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A case of ventricular tachycardia after an earthquake

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ABSTRACT

Severe earthquakes are a natural disaster with high morbidity and mortality. Loss of limbs, acute abdominal surgeries, infectious diseases, kidney failure, psychological illnesses are well-known health problems. Earthquakes also have negative effects on the cardiovascular system. Here, we present a patient who was stable before the earthquake but had episodes of ventricular tachycardia after the earthquake.

Keywords: Earthquake, ventricular tachycardia, arrhythmia

INTRODUCTION

On February 06, 2023, there were two very strong earthquakes in Turkey, first earthquake centered in Sofalaca, Şehitkamil, Gaziantep with Mw:7.7 ML:7.4 at 04:17 a.m. and second earthquake centered in Ekinözü, Kahramanmaraş with Mw:7.6 ML:7.4 at 13:24 p.m.¹

In literature, it has been reported that hypertension, myocardial infarction, heart failure, arrhythmias, thromboembolism and sudden cardiac death may occur in relation to stress after previous natural disasters.²⁻⁵

In this case report, we present a patient with episodes of ventricular tachycardia after an earthquake.

CASE

A 69-year-old male patient was admitted to the cardiology outpatient clinic with the complaint of implantable cardioverter defibrillator (ICD) shock. The patient had coronary bypass graft operation and hypertension. His ejection fraction was 30% and he had heart failure.

The patient underwent VVIR ICD implantation in 2021 due to one episode of ventricular tachycardia. After implantation, the patient had one episode of ventricular tachycardia in February 2022 with ICD shock. There has been no other episode of ventricular tachycardia since February 2022 in the ICD records of the patient. There was no history of arrhythmia in the last one-year follow-up and the patient was stable with medical treatment. The patient was receiving medical treatment with carvedilol, lercanidipine, candesartan, clopidogrel, furosemide, eplerenone and acetylsalicylic acid.

It was learned that the patient had no orthopedic problems due to the earthquake and stayed in a tent for two weeks because his house was damaged. He stated that he was taking his medications without any interruption. There was no electrolyte or thyroid hormone abnormality in the laboratory findings (K: 4,6 (3,5-5,1) mmol/L, Ca: 9,24 (8,4-10,6) mg/dL, Mg: 2,56 (1,8-2,6) mg/dL, TSH: 1,71 (0,27-4,2) uIU/mL, FT4:1,42 (0,93-1,7) ng/dL FT3: 2,2 (2-4,4) ng/L)

When the ICD records of the patient were analyzed, ventricular tachycardia (VT) episodes were observed, which started on the day of the earthquake, occurred 2 times on the day of the earthquake and then occurred 9 times in total within a 15-day period. It was observed that 5 of the VT episodes were terminated with anti-tachycardia pacing therapy (ATP) and in 4 of them, including one on the day of the earthquake, the ICD device shocked after ATP, thus terminating the VT episode (**Figure 1-5**). After ICD controls were performed, magnesium and amiodarone were added to the medical treatment and the patient was followed up. There was no episode of ventricular tachycardia at 2 months.

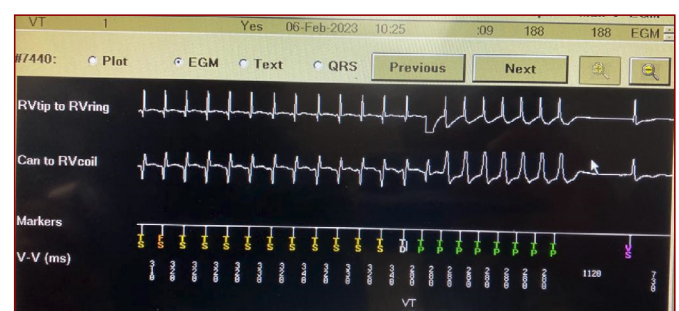


Figure 1. Ventricular tachycardia sample from the patient's ICD recordings, February 6, 2023

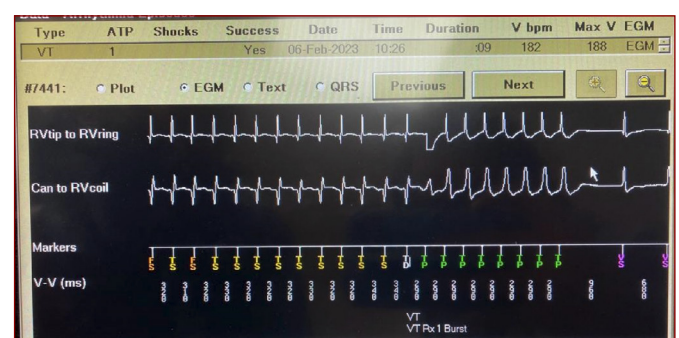


Figure 2. Ventricular tachycardia sample from the patient's ICD recordings, February 6, 2023

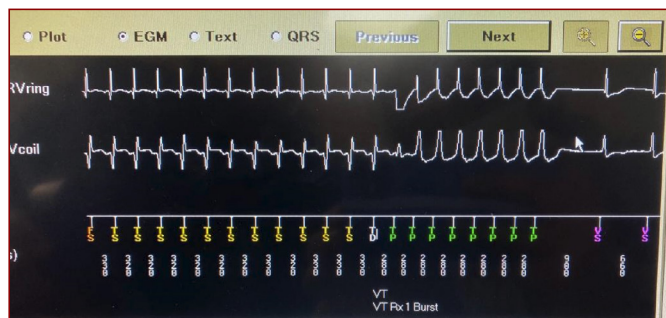


Figure 3. Ventricular tachycardia sample from the patient's ICD recordings, February 21, 2023

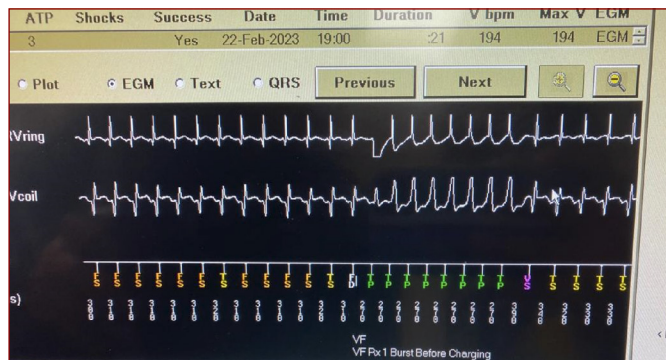


Figure 4. Ventricular tachycardia sample from the patient's ICD recordings, February 22, 2023

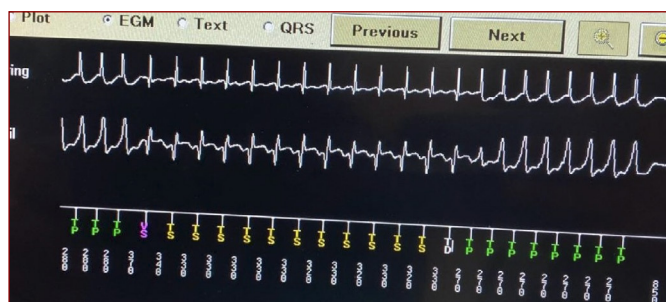


Figure 5. Ventricular tachycardia sample from the patient's ICD recordings, February 22, 2023

DISCUSSION

Severe earthquakes are known to cause human deaths, loss of limbs, crush syndromes, acute renal failure, post-traumatic stress syndromes, and infectious diseases due to hygiene problems.^{6,7} The cardiovascular system is another system affected by strong earthquakes, and one that doctors think of less often than others.

In the pathophysiology of cardiovascular disease, sympathetic system activation, endothelial dysfunction, platelet activation, catecholamine increase, biphasic effect of adrenaline on serum potassium by causing hyperkalemia and then hypokalemia may be involved.^{8,9} It causes hypertension, stroke, arrhythmia, deep vein thrombosis, pulmonary embolism, myocardial infarction and heart failure due to increased risk factors in the acute, subacute and chronic phases.^{2,8,10}

In a study conducted after the earthquake centered in Wenchuan, Sichuan, China, it was found that the number of hemodynamically unstable ventricular tachyarrhythmias was higher after the earthquake and most hemodynamically unstable ventricular tachyarrhythmias occurred during seismically stronger periods.⁹ In our patient, the patient had episodes of ventricular tachyarrhythmia during the period of seismically strong activities.

There was no abnormality in any metabolic parameter in the blood tests that could be performed. Our patient did not have hypertensive episodes at the time of the attacks. Since we could not measure catecholamine levels, it is difficult to say the etiology of ventricular tachycardia in our patient.

CONCLUSION

Severe earthquakes affect the cardiovascular system. Ventricular tachyarrhythmias may occur due to increased stress, increased catecholamines and the effect of adrenaline on serum potassium. It is useful to evaluate patients for arrhythmia when they complain of palpitation after severe earthquakes and to check patients with ICD devices more frequently for arrhythmia after earthquakes.

ETHICAL DECLARATIONS

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Iatrogenic coronary artery dissection that occurred during postpartum coronary angiography

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ABSTRACT

Dissection of the left main coronary artery (LMCA) during diagnostic coronary angiography is a rare but catastrophic event with a poor prognosis. Immediate reperfusion with hemodynamic support should be the primary goal in patients who develop impaired blood flow distal to the acute LMCA and the first option is coronary artery bypass grafting. We present a 37-year-old female patient in the postpartum period who was admitted to the emergency department because of chest pain and was urgently admitted to our catheterization laboratory with the diagnosis of Non-ST elevation myocardial infarction (Non-STEMI). During coronary angiography, the patient developed a dissection that started with the left main coronary artery and progressed to the circumflex and left descending artery. The patient was successfully treated with emergency percutaneous intervention.

Keywords: Iatrogenic left main coronary artery dissection, postpartum period, PTCA-stenting

INTRODUCTION

Catheter-induced left main coronary artery (LMCA) dissection is a rare complication of coronary catheterization. However, although it is the most important cause of death during diagnostic catheterization, left main coronary artery disease and catheter-induced trauma are the most important risk factors.^{1,2} Its incidence was reported as 0.1% during coronary catheterization.³⁻⁶

Although spontaneous peripartum coronary artery dissection (CAD) is rare, it is an increasingly recognized risk for women of childbearing age. The etiology is not fully understood and optimal treatment is controversial.

In this article, we present the case of a 37-year-old woman who had to undergo emergency coronary angiography 10 days after delivery, who developed iatrogenic LMCA dissection and was diagnosed immediately and then treated with coronary percutaneous coronary angioplasty (PTCA). Pathophysiology, clinical presentation, and therapeutic options were also reviewed.

CASE

A 37-year-old female patient presented to the emergency department with chest pain and shortness of breath. She gave birth ten days ago via the C-section. The third child at birth and earlier children were alive (gravida 2 parity 2).

She has no known chronic disease. Also she has no smoking, alcohol or drug use. In the cardiovascular system examination, whose general condition is moderate, there are no additional sounds and heart murmurs in S1, S2. Breath sounds were normal, blood pressure

was 120/90 mmHg, heart rate was 75 beats/minute. Electrocardiography was normal sinus rhythm. In addition, right bundle branch block was detected in the control electrocardiography (**Figure 1A, B**). Ejection fraction was 55% on echocardiography. No segmental wall motion disorder was observed. First-degree mitral regurgitation was observed. In the laboratory findings of the patient, the troponin value was found to be above the reference value. Other laboratory findings were evaluated as normal (**Table**). Emergency coronary angiography was planned for the patient who was accepted as Non-STEMI and continued to have active chest pain and was taken to the laboratory. The LMCA was seated with a 6F diagnostic catheter. After the first opaque injection, the patient's chest pain increased, and it was detected that the dissection progressed from the LMCA to the left anterior descending artery (LAD) and circumflex (CX) artery in the control injection. As the LAD and CX distal flows disappeared and the hemodynamics of the patient deteriorated, it was decided to intervene with coronary PTCA-Stent urgently. A 0.14 mm guide wire was inserted into the LAD and CX lumen. Stents were implanted in the LMCA, LAD and CX with the T-stent technique. TIMI-3 current supplied. The patient, who had no additional problems, was discharged from the hospital on the fifth day, with acetylsalicylic acid, clopidogrel, beta-blocker, proton pump inhibitor, statin, angiotensin-converting enzyme inhibitor as medical treatment. Renal function and remaining laboratory values were in normal range before discharge. Coronary stents were open in the coronary angiography performed three months later.

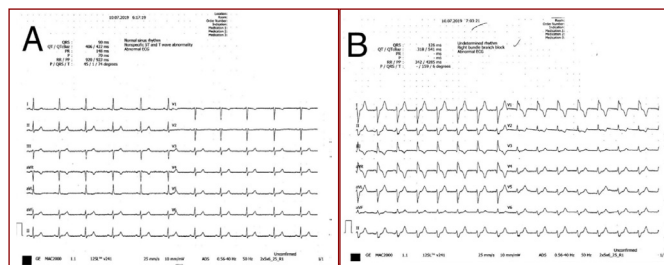


Figure 1. (A) Normal sinus rhythm is observed in the first electrocardiogram of the patient on admission to the emergency department. (B) The right bundle branch block is observed in the electrocardiogram repeated one hour later

Table. Troponin I, CK, CK-MB and D-dimer values are shown			
Examination Name	Result	Unit	Reference Range
CK-MB	58	U/L	0 - 25
Troponin I	6,030	µg/L	0 - 0,300
CK	556	U/L	0 - 170
D-Dimer	2620	µg/L	0 - 500

DISCUSSION

In this article, a case of iatrogenic LMCA dissection that developed in the postpartum period and was successfully survival is presented. We did not find any other case treated in this way in the postpartum period in the literature.

The incidence of peripartum myocardial infarction is thought to be low, and it was reported that it was estimated to be 6.2 in 100 000 pregnancies in a population-based study.⁷ In a different study, coronary artery disease (CAD) was found to be the cause of 43% of peripartum myocardial infarction cases.⁸ She emphasizes that in most cases occur in the postpartum period, the most frequently affected vessel is LAD, and more than one vessel is involved in 30% of the cases.⁹ CAD can be categorized as primary or secondary, secondary dissections are typically associated with iatrogenic and trauma.¹⁰

The etiology of primary (spontaneous) dissection is probably related to hormonal, hemodynamic and autoimmune changes frequently encountered in most pregnant patients.¹⁰⁻¹² CAD should be considered in the differential diagnosis of any young woman presenting with spontaneous coronary artery dissections, signs or symptoms consistent with acute coronary syndrome. This suspicion should be further increased if a woman is peripartum. Also, once suspected, it is imperative that a definitive diagnostic study, i.e. coronary angiography, be completed, if possible, before starting treatment. Although spontaneous CAD was not observed in our case, we had to perform coronary angiography because the diagnosis was suspected (**Figure 2A, B**).

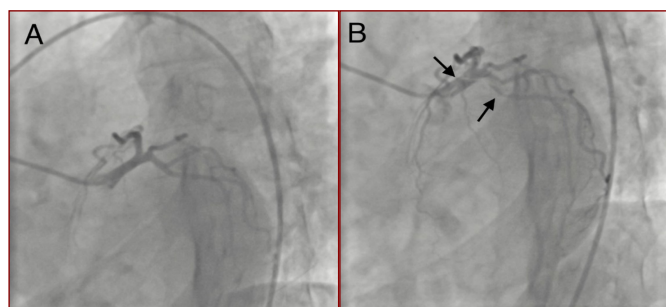


Figure 2. (A) Normal coronary artery during the first opaque injection during coronary angiography

CAD can be classified into three general categories according to its etiology.¹³ 1- spontaneously in patients with atherosclerotic coronary disease; 2- as an iatrogenic complication of percutaneous coronary intervention (PCI); and 3- Idiopathic SCAD and Churg-Strauss syndrome due to conditions such as Marfan syndrome, systemic lupus erythematosus (SLE) and vasculitides, including hepatitis C virus-associated cryoglobulinemia.^{14,15}

The increase in eosinophils because of changes in estrogen and progesterone levels in the peripartum period may lead to accumulation of eosinophils and then degranulation in the adventitia of the coronary arteries, which furthers the dissection.⁸ Changes occur in the increase in estrogen level, proteins and mucopolysaccharides in the tunica media of the arteries, due to the reduction of proteoglycans that lead to the breakdown of collagen and elastin and thinning of the coronary wall.¹⁶⁻¹⁸ This condition is more common in pregnancy because of the significant changes that occur during this period with hemodynamic, respiratory and metabolic responses that can last for 6 months after delivery.^{16,17,19-21} Therefore, we think that the underlying mechanism in both primary or secondary dissection is a pregnancy-related condition. Although the exact mechanism remains unclear, there appears to be a consensus regarding the association between pregnancy-related changes in the pathogenesis of dissection.

Surgical revascularization via coronary artery bypass graft (CABG) remains the most appropriate treatment in patients with LMCA dissection or iatrogenic dissection, in patients whose dissection includes LMCA, in patients with concomitant multivessel dissection, and in patients with disease resistant to medical therapy.²²⁻²⁵ Because surgery is not immediately possible, PCI remains the only salvage option for these patients to limit the extent and duration of ischemia. Many cases have reported successful results after stenting of the left circumflex and right main coronary arteries.²⁶⁻³⁰ One of the main problems in emergency cases requiring LMCA stenting is intravascular ultrasonography (IVUS) or optical coherence tomography imaging, if possible, to ensure proper sizing and apposition of the stent after emergency stenting. In our case, LMCA, LAD and CX stent implantation was performed immediately with T-stent technique, since hemodynamics was impaired. The final images were considered quite satisfactory, although they could not be controlled with IVUS during/after the procedure (**Figure 3A, B**).

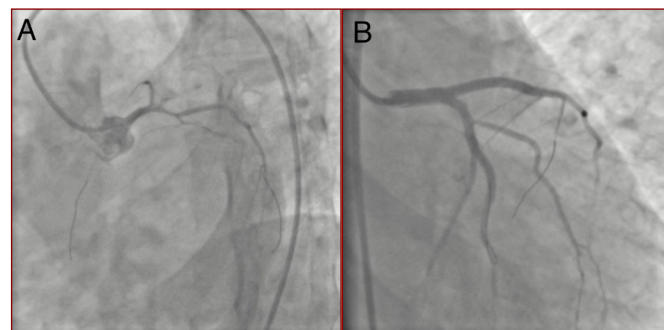


Figure 3. (A) Guidewire bracing of LAD and CX coronary arteries after KAD (B) Final image after stenting with TAP technique (B) Dissection development after first opaque injection

Whatever the mechanism, when there is a high suspicion that KAD may or is already occurring, efforts should be made by the operator to limit the iatrogenic contribution to this problem. In general, iatrogenic causes of de novo dissection include catheter tip or guide wire trauma, severe contrast injection, and overinflation of the angioplasty balloon.³¹⁻³³

Coronary ostia should be carefully and slowly cannulated during coronary angiography in the peripartum period. In addition, it is necessary to be very careful when making an opaque injection. With worldwide experience, there is growing evidence confirming the feasibility and long-term survival of catheter-based therapy following this fatal complication. Although restenosis and revascularization following salvage stenting are not uncommon, salvage stenting should be considered for the initial treatment of iatrogenic LMCA dissection.

CONCLUSION

Iatrogenic LMCA dissection is an important complication during coronary catheterization and may be catastrophic. Prompt intervention is crucial if encountered. CABG is also life saving if percutaneous intervention is not successful.

ETHICAL DECLARATIONS

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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