Zagazig University Medical Journal
www.zumj.journals.ekb.eg
10.21608/ZUMJ.2023.185396.2742 Volume 29, Issue 3, May 2023
Manuscript ID ZUMJ-2302-2742 (R2)
DOI 10.21608/zumj.2023.185396.2742

ORIGINAL ARTICLE

Short-term complications of acute coronary syndrome (ACS): Mansoura University experience

Mahmoud M. Elrayes[1], Ahmed K. Moussa[2*], Gamal F. Gomaa[1]
[1]Cardiology Department, Faculty of Medicine, Mansoura University, Mansoura, Egypt
[2]Cardiology Department, El-Ahrar Teaching Hospital, Zagazig, Egypt

***Corresponding author:**
Mahmoud M. Elrayes
Specialized Medical Hospital, Mansoura University, faculty of medicine,
Gomhoria street,
Mansoura, Egypt 35511,
E-mail:
mahmoud_elrayes@mans.edu.eg

Submit Date 2023-02-03 20:38:16
Revise Date 2023-02-20 16:55:33
Accept Date 2023-02-22

ABSTRACT

Background: In recent years the diagnosis and therapy of acute coronary syndrome (ACS) have improved markedly with a significant decrease in mortality; however, many complications still happen. The present study is designed to detect the short-term complications of ACS and its correlation with clinical variables and treatment strategies.

Methods: This is a prospective clinical study including 152 patients with ACS that was admitted to the cardiovascular department at a specialized medical hospital, Mansoura University during the period between July 2019 to October 2019. We documented the acute in-hospital complications and 1-month outcome.

Results: There were 78 cases (51.3%) with no complications and 74 cases (48.7%) with complications. The most frequent complication was heart failure (HF) which was found in 51 cases (33.6%) followed by ventricular tachycardia(VT) in 19 cases (12.5%), shock in 16 cases (10.5%), sinus bradycardia in 12 cases (7.9%), pericardial effusion in 10 cases (6.6%), ventricular fibrillation(VF) in 7 cases (4.6), 1st-degree heart block(HB) in 5 cases (3.3%), right ventricular (RV) infarction and complete HB in 4 cases (2.6%), hypotension and mural thrombus in 3 cases (2%), Mobitz type-2 HB in 1 case (0.7%), left ventricular(LV) aneurysm in 2 cases (1.3%) and 6 cases (3.9%) arrested or died.

Conclusions: HF was the most common complication among ACS cases and sinus bradycardia was the most common electrical abnormality. Early treatment and percutaneous coronary intervention (PCI) could improve outcomes and reduce complications.

Keywords: acute coronary syndrome, PCI, heart failure, arrhythmias

INTRODUCTION

Acute coronary syndromes include; non-ST-segment elevation ACS (NSTE-ACS) and ST-segment elevation myocardial infarction (STEMI). The NSTE-ACS is subdivided into (1) NSTEMI with elevated cardiac troponin (2) Unstable angina (UA) without elevated cardiac troponin **(1).**

Recently the diagnosis and therapy of ACS have improved markedly with a significant decrease in mortality; however, many complications still happen. LV systolic dysfunction is the most frequent consequence of STEMI and is still a powerful independent predictor of mortality **(2).**

Even though beta-blockers and reperfusion strategies are used, 8% of ACS patients suffer VT/VF that is hemodynamically significant and causes sudden cardiac death **(3).**

In the early hours of STEMI, sinus bradycardia is common, especially in inferior MI. Complete AV block and second-degree type II (Mobitz II) AV block is indications for cardiac pacing. In patients with complete AV block, RV infarction, and hemodynamic compromise, AV sequential pacing should be considered. Patients with AV block who have not yet received reperfusion should be considered for revascularization **(4).**

In the early stages of recovery from STEMI, mechanical problems may arise, albeit their occurrence has decreased dramatically since the introduction of primary PCI. Some of these conditions are acute mitral regurgitation **(5),**

ventricular septal rupture **(6)**, and rupture of the LV free wall **(7).**

LV thrombus formation is a frequent complication in patients with anterior MI, even in the absence of an apical aneurysm **(8).**

Our study aims to detect the short-term complications of ACS and its correlation with clinical variables and treatment strategies.

METHODS

This is a prospective clinical study involving 152 patients with ACS who were admitted to the cardiovascular department of Mansoura University specialized medical hospital between July 2019 and October 2019. All participants provided written informed consent, and the study was approved by the research ethics committee of the Faculty of Medicine at Mansoura University. The research was conducted following The Code of Ethics of the World Medical Association (Declaration of Helsinki) for human subjects.

The patients who refused to participate in the study were excluded.

Diagnosis of ACS was based on the presence of typical chest pain, ECG, and cardiac troponin.

The patients were subjected to 1- Full history taking: age, sex, risk factors (diabetes, hypertension, smoking, dyslipidemia), previous myocardial infarction(MI), family history and analysis of chest pain, **2-**clinical examination: measuring blood pressure on both arms, auscultation of the heart and chest, **3-** ECG within 10 minutes of presentation to the hospital (to detect rate, any conduction disturbances, any ST segment deviation, Q waves of previous STEMI, left bundle branch block(LBBB), STEMI equivalent and R wave progression. Additional right and posterior ECG in some cases to detect right and posterior STEMI, **4-** echocardiogram within 20 minutes of presentation to the hospital (for confirmation of diagnosis, excluding alternative diagnoses, assessment of LV systolic function, segmental wall motion assessment and searching for mechanical complications), **5-** laboratory investigation: cardiac enzymes (CKmb, troponin**)** for 2 sets to confirm the final diagnosis, complete blood count (CBC), random blood sugar, bleeding profile (PT, PTT, INR), liver function tests, kidney function tests (creatinine, urea, and GFR) and full lipid profile. 6- Coronary angiography ± PCI according to European society of cardiology (ESC) guidelines. Then all patients were admitted to the coronary care unit (CCU) for clinical, ECG and echocardiography follow-up during in-hospital admissions and follow-up after discharge for one month for detection of complications.

Statistical analysis:

Data were collected in a master sheet, coded, entered, and analyzed using both SPSS version 24 medical statistics software and Microsoft Excel v. 2016. Data were presented as Mean ± Standard deviation for quantitative variables & number and percentage for qualitative variables. Data were coded, entered, and analyzed by computer package (version 10). Categorical data were compared using chi-square and calculated. The significance level was considered at P-value <0.05 for chi-square and when the confidence interval of odds ratio (CI of OR) not including 1 in its range.

RESULTS

The study included 152 ACS patients. There were 49 females (32.2%) and 103 males (67.8%). The study participants' average age was 58.32 9.47, with a range of 30 to 54. There were 112 cases (73.3%) of hypertension, 92 (60.5%) of diabetes, 85 smokers (55.9%), 66 (43.3%) of prior MI, and 61 (40.1%) with a positive family history of IHD **(Table 1).**

In terms of clinical diagnosis, 5 cases (3.4%) had anterolateral STEMI, 22 cases (14.5%) had anterior STEMI, 31 cases (20.4%) had inferior STEMI, 62 cases (40.8%) had NSTEMI, 32 cases (21.1%) had UA **(Figure 1).** There were 142 cases with typical chest pain (93.4%) and 10 cases with atypical chest pain (6.6%).

In terms of onset, there were 26 cases (17.1%) after 2 hours(h), 25 cases (16.4%) after 3 h, 44 cases (28.9%) after 4 h, 27 cases (17.8%) after 5 h, 24 cases (15.8%) after 6 h, 3 cases (2%) after 7 h, and 3 cases (2%) after 8 h. The mean ejection fraction (EF) was 48.72 11.79, with a range of 22 to 75. (**Table s1).**

The mean serum creatinine was 1.43 1.05, the mean INR was 1.18± 0.59, the mean hemoglobin was 12.66± 1.73, and the mean platelets was 242.97 ±75.53 in terms of the laboratory parameters **(Table s2).**

Regarding the results of angiography, 6 cases (3.9%) were normal, 103 cases (67.8%) were atherosclerotic, and 43 cases (28.3%) **were** not done due to logistics and issues related to patients' insurance approval processing in NSTEMI cases **(Figure 2).** There were 99 cases (41.4%) with non-significant left main (LM) coronary artery lesions and 4 cases (2.6%) with significant lesions (**Table s3).** There were 42 cases (27.6%) with non-significant left anterior descending artery (LAD) lesions and 61 cases (40.1%) with significant lesions (**Table s4).** There were 61 cases (40.1%) with non-

significant left circumflex artery (LCX) lesions and 42 cases (27.6%) with a significant lesion **(Table s5).** There were 59 cases (38.1%) with non-significant right coronary artery (RCA)lesions and 44 cases (28.9%) with significant lesions**(Table s6).** Regarding the number of vessel affection, there were 6 normal cases (3.9%), 21 cases (13.8%) with non-significant vessel affection, 39 cases (25.7%) with single vessel disease, 28 cases (18.4) with two vessels disease and 18 cases (11.85%) with multiple vessel disease **(Table s7).**

Regarding the analysis of complications, there were 78 cases (51.3%) with no complications and 74 cases (48.7%) with complications **(Table s8).** Regarding the analysis of types of complications, the most frequent complication was HF in 51 cases (33.6%) then VT in 19 cases (12.5%), shock in 16 cases (10.5%), sinus bradycardia in 12 cases (7.9%), pericardial effusion in 10 cases (6.6%), VF in 7 cases (4.6), 1st degree HB in 5 cases (3.3%), RV infarction and complete heart block in 4 cases (2.6%), hypotension and mural thrombus in 3 cases (2%), Mobitz type-2 in 1 case (0.7%), LV aneurysm in 2 cases (1.3%) and 6 cases (3.9%) arrested or died**(Table 2)**.

Regarding the analysis of demographic data according to complications, the mean age of the complication group was 60.84 ± 9.86 which was statistically higher than the group with no complications (P= 0.001). There were 21 males (28.4%) and 53 females (71.6%) with complications and 28 males (35.9%) and 50 females (64.1%) with no complications with a non-significant difference between the two groups (P= 0.332). There was also a non-significant difference between the two groups regarding HTN, DM, smoking, and positive family history of IHD. There were 26 cases with prior MI (35.1%) in the complication group which was statistically lower than the group with no complication (P= 0.045) **(Table 3)**.

The mean EF (%) in the complication group was 41.24 ± 11.33 and 55.81 ± 6.82 in the no-complication group with a significant difference between the two groups (P < 0.001) **(Table 4)**.

Regarding the analysis of laboratory parameters according to complications, there was no statistically significant difference in creatinine, INR, hemoglobin, and platelets between the complication and no complication groups **(Table s9)**.

Regarding the results of coronary angiography concerning complications, there were 57 atherosclerotic cases (100%) in the complication group with 6 normal cases (11.5%) and 46 atherosclerotic cases (88.5%) in the no complication group with a significant difference between the two groups (P= 0.008) **(Table s10)**. There were 55 cases (96.5%) of non-significant and 2 cases (3.5%) of significant LM disease in the complication group with a non-significant difference compared to the no complication group (P= 0.447) **(Table s11)**. There were 19 cases (33.3%) of non-significant and 38 cases (66.7%) of significant LAD disease in the complication group with a non-significant difference compared to the no-complication group (P= 0.076) **(Table s12)**. There were 23 cases (40.4%) of non-significant and 34 cases (59.6%) of significant LCX disease in the complication group with **a** significant difference compared to the no-complication group (P < 0.001) **(Table s13)**. There were 21 cases (36.8%) of non-significant and 36 cases (63.2%) of significant RCA disease in the complication group with a significant difference compared to the no-complication group (P < 0.001) **(Table s14)**.

Regarding the correlation between diagnosis and culprit vessels; the LAD artery was the culprit vessel in 2 cases (40%) with anterolateral STEMI, 20 cases (90.9%) with anterior STEMI, and 1 case (3.2%) with inferior STEMI with a significant difference between the three groups (P= 0.001), LCX artery was the culprit vessel 2 cases (40%) with anterolateral STEMI, no cases with anterior STEMI and 2 cases (6.5%) with inferior STEMI with significant difference between the three groups (P= 0.001) and RCA artery was the culprit vessel in 18 cases (58.1%) with inferior STEMI and no cases with anterolateral STEMI or anterior STEMI with significant difference between the three groups (P= 0.001) **(Figure s1)**.

Regarding the analysis of the complications according to diagnosis, the most common complication recorded with anterolateral STEMI was HF in 4 cases (80%) then VT in 3 cases (60%) , shock, sinus bradycardia, VF, pericardial effusion, LV aneurysm, mural thrombus, and death each in 1 case (20%), the most common complication recorded with anterior STEMI was HF in 14 cases (63.3%) then VT in 6 cases (27.2%), pericardial effusion in 4 cases (18.2%), sinus bradycardia in 3 cases (13.6%) and mural thrombus in 2 cases (9%) then shock, VF, LV aneurysm, and death each in 1 case (4.5%), the most common complication in inferior STEMI was shock and sinus bradycardia each of which was recorded in 8 cases (25.8%) then HF and VT each in 5 cases (16.1%), RV infarction and complete heart block in 4 cases (12.9%), VF in 3 cases (9.7%) then hypotension, pericardial effusion and death each in 2

cases (6.5%), the most common complication recorded with NSTEMI was HF in 24 cases (38.7%) then shock and VT each in 5 cases (8%), VF, pericardial effusion and death each in 2 cases (3.2%) and hypotension in 1 case (1.6%) and with UA, there were 4 cases (12.5%) represented with HF and only 1 case (3.1%) with pericardial effusion**(Table 5)**.

Table 1: Demographic data of the subjects in the study

Items	**Study cases n= 152**	
	Number	**Percent (%)**
Age (Years)		
Mean ± SD	**58.32 ± 9.47**	
Median (Range)	**58 (30- 54)**	
Sex		
Females	49	32.2
Males	103	67.8
Chronic diseases and risk factors		
Hypertension	**112**	**73.3**
DM	**92**	**60.5**
Smokers	**85**	**55.9**
Prior MI	**66**	**43.3**
Positive family history of IHD	**61**	**40.1**

Categorical data expressed as Number (%)
Continuous data are expressed as mean ± SD median (Min-Max)

Table 2: Analysis of types of complications among the included cases

	Number	**Percent(%)**
HF	51	33.6
Shock	16	10.5
Hypotension	3	2
RV infarction	4	2.6
Sinus bradycardia	12	7.9
VT	19	12.5
VF	7	4.6
Pericardial effusion	10	6.6
1st degree HB	5	3.3
Mobitz type-2	1	0.7
Complete heart block	4	2.6
LV aneurysm	2	1.3
Mural thrombus	3	2
Arrest (died)	6	3.9

Table 3: Analysis of demographic data according to Complications

Items	Complications n=74	No complications n=78	Test of significance
Age	**60.84 ± 9.86**	**55.92 ± 8.47**	t = 3.302 P= 0.001*
Sex			
-Male	**21 (28.4%)**	**28 (35.9%)**	χ2= 0.983 P= 0.332
-Female	**53 (71.6%)**	**50 (64.1%)**	
HTN	**57 (77%)**	**55 (70.5%)**	χ2= 0.831 P= 0.362
DM	**46 (62.2%)**	**46 (59%)**	χ2= 0.162 P= 0.688
Smoking	**46 (62.2%)**	**39 (50%)**	χ2= 2.279 P= 0.131
Prior MI	**26 (35.1%)**	**40 (51.3%)**	χ2= 4.030 P= 0.045*
Positive family history of IHD	**32 (43.2%)**	**29 (37.2%)**	χ2= 0.581 P= 0.446

P: probability. Continuous data expressed as mean±SD
Categorical data expressed as Number (%) *t: independent samples t-test*
χ2: Chi-square test **: significant value < 0.05*

Table 4: Analysis of EF according to complications

Items	Complications n=74	No complications n=78	Test of significance
EF (%)	**41.24 ± 11.33**	**55.81 ± 6.82**	t = -9.659 P < 0.001*

EF; ejection fraction
P: probability.
Continuous data expressed as mean±SD
Categorical data expressed as Number (%)
t: independent samples t-test
**: significant value < 0.05*

Table 5: Analysis of the complications according to diagnosis

	Anterolateral STEMI (N=5)	Anterior STEMI (N=22)	Inferior STEMI (N=31)	NSTEMI (N=62)	UA (N=32)
HF	4 (80%)	14 (63.3%)	5 (16.1%)	24 (38.7%)	4 (12.5%)
Shock	1 (20%)	1 (4.5%)	8 (25.8%)	6 (9.7%)	0 (0%)
Hypotension	0 (0%)	0 (0%)	2 (6.5%)	1 (1.6%)	0 (0%)
RV infarction	0 (0%)	0 (0%)	4 (12.9%)	0 (0%)	0 (0%)
Sinus bradycardia	1 (20%)	3 (13.6%)	8 (25.8%)	0 (0%)	0 (0%)
VT	3 (60%)	6 (27.2%)	5 (16.1%)	5 (8%)	0 (0%)
VF	1 (20%)	1 (4.5%)	3 (9.7%)	2 (3.2%)	0 (0%)
Pericardial effusion	1 (20%)	4 (18.2%)	2 (6.5%)	2 (3.2%)	1 (3.1%)

	Anterolateral STEMI (N=5)	Anterior STEMI (N=22)	Inferior STEMI (N=31)	NSTEMI (N=62)	UA (N=32)
1st degree HB	0 (0%)	0 (0%)	5 (16.1%)	0 (0%)	0 (0%)
Mobitz type-2	0 (0%)	0 (0%)	1 (3.2%)	0 (0%)	0 (0%)
Complete heart block	0 (0%)	0 (0%)	4 (12.9%)	0 (0%)	0 (0%)
LV aneurysm	1 (20%)	1 (4.5%)	0 (0%)	0 (0%)	0 (0%)
Mural thrombus	1 (20%)	2 (9%)	0 (0%)	0 (0%)	0 (0%)
Arrest (died)	1 (20%)	1 (4.5%)	2 (6.5%)	2 (3.2%)	0 (0%)

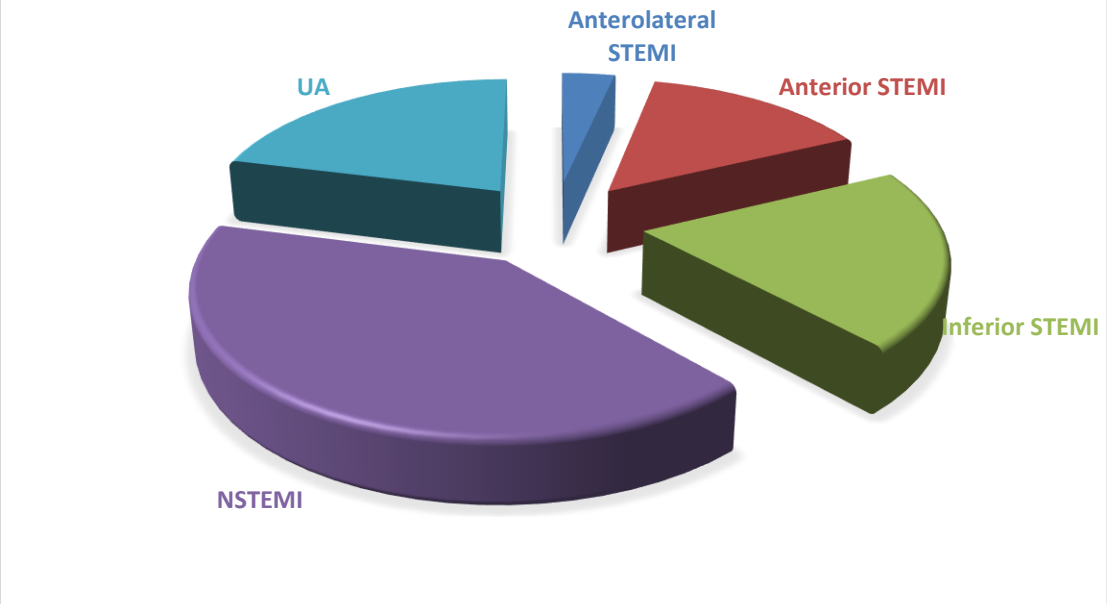

Figure 1: Clinical diagnosis in the cases of the study

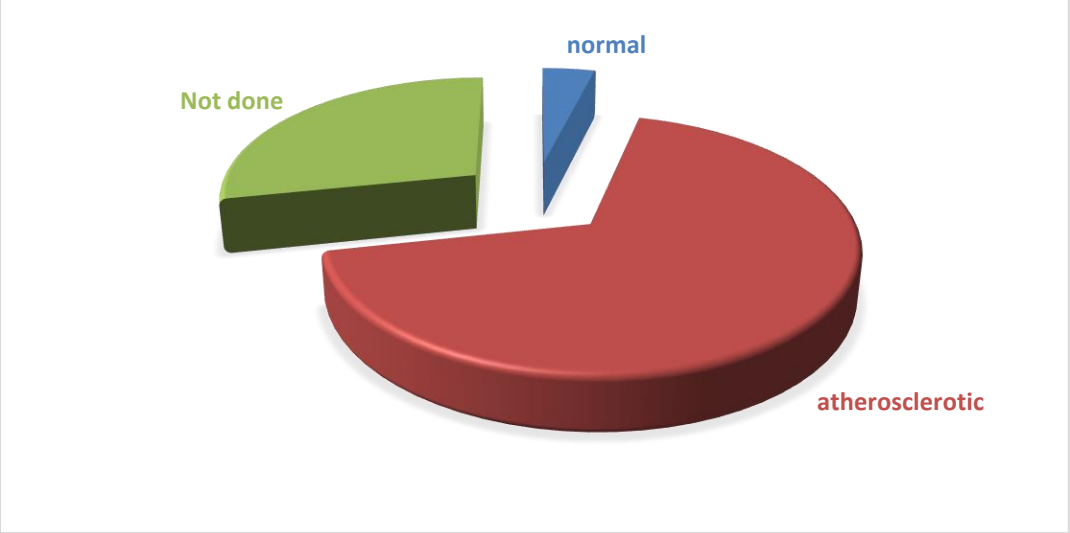

Figure 2: Findings of angiography in the cases of the study

DISCUSSION

The primary goal of our research was to identify the short-term complications of ACS and correlate them with clinical variables and treatment strategies. After excluding those who did not respond to follow-up calls, 152 patients with ACS were incorporated in this study at the cardiovascular medicine department of Mansoura University Hospital from July to October 2019.

Risk factors:

The age range in our study was 30 to 54 years, with a mean SD of 58.32 9.47 years. They were divided into 49 females (32.2%) and 103 males (67.8%). This was consistent with the findings of Balakumaran et al., who conducted a study on 50 ACS patients, 66% of whom were males and 44% were females, with a mean age of 63 10.7 years. The majority of them (94%) were over the age of 50, and 38% were over the age of 60. **(9).** The current study's main risk factors were hypertension (73.3%), diabetes (60.5%), smoking (55.9%), prior MI (43.3%), and patients with a family history of IHD (40.1%). This study parallels that of Balakumaran et al, who found 35 patients (70%) with hypertension, 16 patients (32%) with diabetes, 21 smokers (40%), and 10 tobacco chewers (20%). However, only one patient (2%) had a prior MI, and four cases (8%) had a family history of a similar disease **(9).** The most common cardiovascular risk factor was hypertension, which was observed in 58% of cases in the Styczkiewicz et al. study**(10).**

Diagnosis:

In our study, 5 patients (3.4%) had anterolateral STEMI, 22 patients (14.5%) had anterior STEMI, 31 patients (20.4%) had inferior STEMI, 62 patients (40.8%) had NSTEMI, and 32 patients (21.1%) had UA. This study parallels the Helwani et al. study in that there were more than 80% of ACS events with NSTEMI (n=117 of a total 146); a smaller proportion with ST-elevation MI (n=21, 14.4%) and unstable angina (n=8, 5.5%) **(11).**

Presentation:

In our study, chest pain was atypical in 10 patients (6.6%) and typical in 142 patients (93.4%). As a result, the vast majority of patients experienced typical chest pain. In terms of the incidence of complications, there was a statistically significant difference (p = 0.007) between typical and atypical pain. According to Styczkiewicz et al., chest pain was the most commonly reported ACS symptom **(10).**

The rough pain to door time was 2 h in 26 patients (17.1%), 3 h in 25 patients (16.4%), 4 h (28.9%), 5 h in 27 patients (17.8%), 6 h in 24 patients (15.8%), 7 h (2%), and 8 h (2%), according to the current study. This rough pain-to-door time of 8 h presented to the hospital was comparable to the study **by Sunamura** et al., which reported a mean duration of 3.5 h **(12).** In our study, 26 patients (17.1%) received early intervention, while 126 patients (82.9%) did not.

LVEF:

In this analysis, EF ranged from 22% to 75%, with mean values of 48.72 and 11.79. Comparing the complication group with the non-complication group, there was a statistically significant difference in LV EF (p 0.001). Interestingly, patients with an EF of 40% were protected from complication and mortality, while patients with an EF of >40% were protected from complications in the ACS cohort and those with an EF of 20% were at a higher risk for death **(13).**

Complications:

In our study, 78 patients (51.3%) had no complications and 74 patients (48.7%) had complications. Of these; heart failure occurred in 51 patients (33.6%), cardiogenic shock was presented in 16 patients (10.5%), hypotension was found in 3 patients (2%), right ventricle infarction was found in 4 patients (2.6%), sinus bradycardia was found in 12 patients (7.9%), VT was found in 19 patients (12.5%), VF was found in 7 patients (4.6%), pericardial effusion was found in 10 patients (6.6%), 1st-degree heart block was found in 5 patients (3.3%), Mobitz type 2 was found in 1 patient (0.7%), complete heart block was found in 4 patients (2.6%), left ventricular aneurysm was found in 2 patients (1.3%), mural thrombus was found in 3 patients (2%), and cardiac arrest was presented in 6 patients (3.9%).

By contrast, Balakumaran et al. found that 82% of patients with ACS problems presented within 12 hours of the onset of chest pain, 16% came between 12 and 24 hours, and 2% presented after 24 hours. For every 50 patients, half (26/50) reported having only one complication, 38% (19/50) had two, and 10% (5/50) had none **(9).**

In their investigation, Joshi et al. found arrhythmia, heart failure, and cardiogenic shock frequently **(14).** Balakumaran et al. (9) found that cardiogenic shock was the most prevalent complication among patients, although in prior research (30%) and our own (10.5%), this complication rate was substantially lower.

Compared to the study by Balakumaran et al., which found a prevalence of 14%, our study

found a far greater prevalence of cardiac failure at 33.6%. This study finds a far lower prevalence of heart block—6.6%—than previous research (11%) **(13).**

Regarding the incidence of mortality, in the current study, it was (3.9%) which is much lower compared to other studies such as Balakumaran et al. study (42%) **(9)**.

The mean incidence of complication according to age was 60.84 ± 9.86 years and patients without complications was a mean age of 55.92 ± 8.47 years with statistically significant values (p = 0.001). Of patients with prior MI, 26 patients (35.1%) had complications and 40 patients (51.3%) had no complications. However, the relation of complications to sex, hypertension, DM, smoking, and family history showed a non-significant statistical difference (p > 0.05).

The risk of developing ACS-related problems increases steadily after age 60, and then spikes for those beyond the age of 80. The investigation by Srinath Reddy et al. corroborated this **(15).**

This study disagrees with Balakumaran et al. study who found that complications corresponding to patients' age were 62.69 ± 11.05 years had complications and 67.6 ± 5.37 had no complications with statistically non-significant value (p = 0.335) **(9).** However, they agreed with our results in the fact that smoking does not have a significant value in the difference between complicated and non-complicated ACS (p = 0.744)

Regarding the onset duration of the disease, the current study did not show a statistically significant value between complicated and non-complicated ACS. On the other hand, there was a statistically significant difference (p = 0.007) between typical and atypical pain as regards the incidence of complications.

However, Balakumaran et al. study disagreed with our values as they found a statistical difference regarding the duration of onset (p = 0.0329) between complicated and non-complicated ACS **(9)**.

Angiography:

According to angiography in the study in our hands, the LAD artery was significantly affected in 61 patients (40.1%), 6 patients (3.9%) were normal, 21 patients (13.8%) had non-significant vessel disease, while single vessel disease was found in 39 patients (25.7%), 28 patients (18.4%) had a two-vessel disease and 18 patients (11.8%) had multiple vessel disease. On angiographic findings, LAD artery affection had no statistically significant difference between complicated and non-complicated ACS, while LCX and RCA arteries affection showed a statistically highly significant difference (P <0.001) between complicated and non-complicated ACS.

Laboratory parameters:

None of the laboratory parameters such as creatinine, INR, hemoglobin concentration, and platelet count had statistically significant values (p > 0.05) in comparison between complicated and non-complicated ACS.

Our findings are supported by the findings of Kumar and Cannon, who hypothesized that creatinine (CK-MB), INR, hemoglobin concentration, and platelet count had no statistically significant relationship with complications. However, they concluded that platelet counts are important in ACS, and newer antiplatelet drugs are being developed to maximize atherothrombotic event reduction while minimizing bleeding complications **(16).**

The limited sample size and single-center nature of our study, as well as the challenges of continuing to contact patients after they've been discharged from the hospital, are limitations.

CONCLUSION

HF was the most common complication among ACS and sinus bradycardia was the most common electrical abnormality. Early treatment and percutaneous coronary intervention (PCI) could improve outcomes and reduce complications.

Disclosure: No disclosures

Funding: This work didn't receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' contributions

ME: conception and design, acquisition of data, analysis, and interpretation of data, drafting of the manuscript, critical revision of the manuscript for important intellectual content, and final approval of the manuscript.

AM: conception and design, acquisition of data, analysis, and interpretation of data, drafting of the manuscript, critical revision of the manuscript for important intellectual content, and final approval of the manuscript.

GG: conception and design, acquisition of data, analysis, and interpretation of data, drafting of the manuscript, critical revision of the manuscript for important intellectual content, and final approval of the manuscript.

REFERENCES

1- Roffi M, Patrono C, Collet JP, Mueller C, Valgimigli M, Andreotti F, et al; ESC Scientific Document Group. 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation: Task Force

for the Management of Acute Coronary Syndromes in Patients Presenting without Persistent ST-Segment Elevation of the European Society of Cardiology (ESC). Eur Heart J. 2016 Jan 14;37(3):267-315

2- Ng VG, Lansky AJ, Muller S, Witzenbichler B, Guagliumi G, Peruga JZ, et al. The prognostic importance of left ventricular function in patients with ST-segment elevation myocardial infarction: the HORIZONS-AMI trial. Eur Heart J Acute Cardiovasc Care. 2014 Mar;3(1):67-77.

3- Piccini JP, Schulte PJ, Pieper KS, Mehta RH, White HD, Van de Werf F, et al. Antiarrhythmic drug therapy for sustained ventricular arrhythmias complicating acute myocardial infarction. Crit Care Med. 2011 Jan;39(1):78-83.

4- Authors/Task Force members; Windecker S, Kolh P, Alfonso F, Collet JP, Cremer J, Falk V, et al. 2014 ESC/EACTS Guidelines on myocardial revascularization: The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)Developed with the special contribution of the European Association of Percutaneous Cardiovascular Interventions (EAPCI). Eur Heart J. 2014 Oct 1;35(37):2541-619.

5- Porto AG, McAlindon E, Ascione R, Bucciarelli-Ducci C. Magnetic resonance imaging-based management of silent cardiac rupture. J Thorac Cardiovasc Surg. 2015 Mar;149(3): e31-3.

6- Hua K, Peng Z, Yang X. Long-Term Survival and Risk Factors for Post-Infarction Ventricular Septal Rupture. Heart Lung Circ. 2021 Jul;30(7):978-985.

7- Bajaj A, Sethi A, Rathor P, Suppogu N, Sethi A. Acute Complications of Myocardial Infarction in the Current Era: Diagnosis and Management. J Investig Med. 2015 Oct;63(7):844-55.

8- Weinsaft JW, Kim J, Medicherla CB, Ma CL, Codella NC, Kukar N, et al. Echocardiographic Algorithm for Post-Myocardial Infarction LV Thrombus: A Gatekeeper for Thrombus Evaluation by Delayed Enhancement CMR. JACC Cardiovasc Imaging. 2016 May;9(5):505-15.

9- Balakumaran V, Namrata H, Anirudhya, Rathod N. Analysis of Complications of Acute Coronary Syndrome and Related Outcomes in India. Int J Clin Cardiol. 2020 7:194

10- Styczkiewicz K, Styczkiewicz M, Myćka M, Mędrek S, Kondraciuk T, Czerkies-Bieleń A, et al. Clinical presentation and treatment of acute coronary syndrome as well as 1-year survival of patients hospitalized due to cancer: A 7-year experience of a nonacademic center. Medicine (Baltimore). 2020 Jan;99(5): e18972

11- Helwani MA, Amin A, Lavigne P, Rao S, Oesterreich S, Samaha E, et l. Etiology of Acute Coronary Syndrome after Noncardiac Surgery. Anesthesiology. 2018 Jun;128(6):1084-1091

12- Sunamura M, Ter Hoeve N, van den Berg-Emons RJG, Boersma E, Geleijnse ML, van Domburg RT. Patients who do not complete cardiac rehabilitation have an increased risk of cardiovascular events during long-term follow-up. Neth Heart J. 2020 Sep;28(9):460-466.

13- Boden WE, O'Rourke RA, Teo KK, Hartigan PM, Maron DJ, Kostuk WJ, et al; COURAGE Trial Research Group. Optimal medical therapy with or without PCI for stable coronary disease. N Engl J Med. 2007 Apr 12;356(15):1503-16.

14- Joshi P, Islam S, Pais P, Reddy S, Dorairaj P, Kazmi K, et al. Risk factors for early myocardial infarction in South Asians compared with individuals in other countries. JAMA. 2007 Jan 17;297(3):286-94.

15- Srinath Reddy K, Shah B, Varghese C, Ramadoss A. Responding to the threat of chronic diseases in India. Lancet. 2005 Nov 12;366(9498):1744-9.

16- Kumar A, Cannon CP. Acute coronary syndromes: diagnosis and management, part I. Mayo Clin Proc. 2009 Oct;84(10):917-38.

To cite:

Elrayes, M., Moussa, A., Gomaa, G. Short-term complications of acute coronary syndrome (ACS): Mansoura university experience. *Zagazig University Medical Journal,* 2023; (824-832): -. doi: 10.21608/zumj.2023.185396.2742