DOI: 10.21276/aimdr.2017.3.1.ME7

Original Article ISSN (O):2395-2822; ISSN (P):2395-2814

The Study of Arrhythmias in the First Week of Myocardial Infarction.

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Received: November 2016
Accepted: December 2016

ABSTRACT

Background: Cardiac arrhythmias are quite common in the setting of acute myocardial infarction. Ninety percent of patients with acute myocardial infarction (AMI) have some cardiac rhythm abnormality, and 25% have cardiac conduction disturbance within 24 hours of infarct onset. These are tachyarrhythmias, ventricular arrhythmias, and atrioventricular block. A good correlation exists between the site of infarct and type of arrhythmias. Sinus bradycardia, sinoatrial escape rhythms, Wenkebach type and complete heart block are usually associated with inferior wall myocardial infarction (IWMI). Atrial premature contraction (APC) and ventricular premature contraction (VPC) are usually seen in anterior wall myocardial infarction (AWMI). **Methods:** The present cross-sectional study was conducted on 100 consecutive cases of acute myocardial infarction with arrhythmias attending as indoor emergency patients of Guru Nanak Dev Hospital attached to Government Medical College, Amritsar were included. History, clinical examination and required investigations including lipid profile, blood sugars, electrolytes, CPK-MB, ECG, and 2D-Echo were done. **Results:** Out of the hundred patients in the study, males (57%) outnumbered females (43%). Most of the patients were found in the age group of 51-60 years (34%). Smoking was the most significant risk factor (38%), followed by diabetes mellitus (35%), hypertension (30%) and prior ischemic heart disease (28%). The majority (56%) of the patients had anterior wall myocardial infarction (AWMI), followed by IWMI (24%), IWMI + RVMI (13%) and AWMI + IWMI (7%). Most of the arrhythmias (62%) developed during initial 24 hours of admission, while 27% in next 24 hours and 11% after 48 hours of admission to hospital. The most common arrhythmia observed was VPC (50%), followed by sinus tachycardia (48%), sinus bradycardia (16%), accelerated idioventricular rhythm (9%), 3rd degree heart block (7%), ventricular tachycardia (6%), 1st degree Heart Block (5%), 2nd degree Heart block (5%), ventricular fibrillation (4%), APC (4%) and AF (1%). Maximum incidence of VPC, sinus tachycardia, ventricular tachycardia (VT) and ventricular fibrillation (VF) were recorded in AWMI, while the maximum incidence of sinus bradycardia and AV block were observed in IWMI. Mortality was more common in patients developing arrhythmias specifically VT, VF and heart blocks especially 2nd-degree heart block and 3rd-degree heart block. **Conclusion:** Most of the patients with acute myocardial infarction develop some kind of arrhythmias which is an important cause of morbidity in these patients, develop during the initial 24 hours of admission to the hospital. Most common arrhythmias observed were VPC, followed by sinus tachycardia, AV block, bundle branch block, sinus bradycardia, VT, and VF. VPC, sinus tachycardia, VT, and VF were more common in AWMI, while sinus bradycardia and AV block were more common in IWMI. Diligent monitoring for arrhythmias and appropriate treatment can be life saving.

Keywords: arrhythmia, acute myocardial infarction.

INTRODUCTION

Cardiac arrhythmias are quite common in the setting of acute myocardial infarction. Ninety percent of patients with acute myocardial infarction (AMI) have some cardiac rhythm abnormality, and 25% have a cardiac conduction disturbance within 24 hours of infarct onset. The incidence (4.5%) of serious arrhythmias such as ventricular fibrillation (VF) is greatest in the first hour of an acute myocardial infarction and declines very rapidly thereafter.[1]

Deaths from arrhythmias in the setting of myocardial infarction have been one of the most frequent causes of sudden cardiac death. 60% of all deaths associated with acute myocardial infarction (AMI) occur within 1st hour and are attributable to ventricular arrhythmias, in particular, ventricular fibrillation.[2]

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Cardiac arrhythmias and conduction abnormalities complicating acute myocardial infarction (AMI) have been associated with adverse prognosis in numerous reports.[3–8] There is a strong connection

between the site of infarct and type of arrhythmias. Sinus bradycardia, sinoatrial escape rhythms, complete heart block and Wenckebach type are typically associated with inferior wall myocardial infarction. Atrial and ventricular premature contractions are more frequently seen in anterior wall myocardial infarction.[9]

A life-threatening arrhythmia (eg, ventricular tachycardia, ventricular fibrillation) may be the first manifestation of ischemia. These arrhythmias may cause many of the reported sudden cardiac deaths in patients with acute coronary syndromes. Ventricular fibrillation or sustained ventricular tachycardia has been reported in up to 20% of patients. The risk of arrhythmic death in survivors of AMI is highest in the first six months of myocardial infarction and remains high for the subsequent two years.[10]

Supraventricular arrhythmias occur in less than 10% of patients with acute MI and are not directly ischemic in origin. Patients who develop these arrhythmias tend to have more severe ventricular dysfunction than those who do not and hence, experiencing a worse outcome. Sinus tachycardia may be due to pain, anxiety, or drugs. Atrial fibrillation is an indicator of worse prognosis after acute myocardial infarction, both in the short-term and in the long-term, even in an unselected population.[11] AF is associated with increased in-hospital mortality.[12] Sinus bradycardia is common (9–25%) in the first hour, especially in inferior infarction.[13] Sinus bradycardia may be due to drugs, ischemia or vagal response.

MATERIALS AND METHODS

After the approval of Institutional Thesis and the ethical committee the present cross-sectional study was conducted on 100 patients with acute myocardial infarction with arrhythmia, of age ≥ 19 years of either sex admitted to Guru Nanak Dev Hospital, Amritsar. The purpose of the study was explained to each individual and informed consent was taken. A detailed history was taken regarding the onset of symptoms, duration, presence of risk factors, past history of IHD and family history of coronary artery disease (CAD). The diagnosis of AMI was based on the Third Universal Definition of Myocardial Infarction. Physical examination of patients was done to assess the hemodynamic stability, congestive heart failure, and cardiogenic shock. Twelve-lead ECG was done at admission, at 24 hours, 48 hours and at the time of arrhythmia. Routine blood investigations like complete blood count, random blood sugar, blood urea, serum creatinine, serum electrolytes, lipid profile, CPK-MB and X-ray chest (PA view). 2-D Trans Thoracic Echocardiography (TTE) with doppler flow study was done whenever required using Colour Doppler Echocardiography (CDE) machine with an adult transducer of 2.5M Hz (Sonosite USA), during the first 7 days of hospitalization. Those excluded from the study were patients < 19 years of age of both sexes and patients requiring intervention like angioplasty or pacemaker insertion. The aim of the study was to study the incidence of arrhythmias in the first week of Acute Myocardial Infarction (AMI) with respect to the location of infarction as well as age and sex wise distribution. The data so collected was analyzed by frequency, percentage, and chi-square test.

RESULTS

The present study was a cross-sectional study carried out on 100 patients with acute myocardial infarction with arrhythmia in which mean age was 59(±12) years and male to female ratio was 1.32: 1. The incidence of females was less in early decades, but in later ages, sex didn't offer any advantage either in the incidence of AMI or arrhythmias. 57% of arrhythmias were found in males and 43% of arrhythmias were found in females. In subjects over 70 years, females outnumbered males. Smoking was the most significant risk factor (38.0%) in our study, followed by diabetes mellitus (35.0%), hypertension (30.0%) and prior ischemic heart disease (28.0%). The majority of the patients had anterior wall myocardial infarction (AWMI) 56.0%, followed by inferior wall myocardial infarction (24.0%), inferior wall + right ventricular myocardial infarction (13.0%) and anterior wall + inferior wall myocardial infarction (7.0%). 62.0% of the patients had arrhythmias during initial 24 hours of admission to hospital, followed by 24-48 hours (27.0%) and >48 hours (11.0%). The most common arrhythmia was ventricular premature contraction (50.0%), followed by sinus tachycardia (48.0%), sinus bradycardia (16.0%), accelerated idioventricular rhythm (9.0%), 3rd degree heart block (7.0%), ventricular tachycardia (6.0%), 1st degree Heart Block (5.0%), 2nd degree Heart block (5.0%), ventricular fibrillation (4.0%), APC (4.00%) and AF (1.0%).

Tachyarrhythmias were common with anterior wall MI and associated MI, while the inferior wall was the leading site for developing bradyarrhythmias. Of the total 50 VPCs, 40 VPCs (80.00%) were seen in AWMI; 4 VPCs (8.00%) in IWMI, 4 VPCs (8.00%) in AWMI + IWMI and 2 VPCs (4.00%) in IWMI + RVMI. Of the total 48 sinus tachycardia cases, 40 sinus tachycardia (83.33%) was seen in AWMI; 3 sinus tachycardia (6.25%) in IWMI, 3 sinus tachycardia (6.25%) in AWMI + IWMI and 2 sinus tachycardia (4.17%) in IWMI + RVMI. Of the total 16 sinus bradycardia cases, 11 sinus bradycardia (68.75%) was seen in IWMI and 5 sinus bradycardia (31.25%) in IWMI + RVMI. All AIVR were seen in association with AWMI. 75.00% of the APCs were seen in AWMI and another 25.00% in AWMI+ IWMI. One case of AF was seen in AWMI. Out of 6

VT, 4 VTs (66.66%) were seen in AWMI, 1 VT (16.67%) was seen in IWMI and another 1 VT (16.67%) was seen in AWMI + IWMI. Out of 4 VF, 3 VFs (75.00%) was seen in AWMI and 1 VF (25.00%) was seen in AWMI + IWMI. Of the total 5 cases of 1st-degree heart block, 1 (20.00%) were seen in AWMI; 3 (60.00%) in IWMI, 1 (20.00%) in IWMI + RVMI. Of the total 5 cases of 2nd-degree heart block, 1 (20.00%) were seen in AWMI; 1 (20.00%) was seen in IWMI, 1 (20.00%) in AWMI + IWMI and 2 (40.00%) in IWMI + RVMI. Of the total 7 cases of 3rd-degree heart block, 2 (28.57%) were seen in AWMI; 4 (57.14%) in IWMI, 1 (14.29%) in IWMI + RVMI.

In the present study, maximum mortality was seen in patients with IWMI + RVMI (3 out of 13, 23.07%), followed by IWMI (4 out of 24, 16.66%), AWMI +IWMI (1 out of 7 patients, 14.28%) and AWMI (6 out of 56, 10.71%). With respect to type of arrhythmia, maximum mortality was due to ventricular tachycardia (5 out of 6 cases, 83.33%), followed by 2nd degree heart block (3 out of 5 cases, 60.00%), 3rd degree heart block (4 out of 7 cases, 57.14%), ventricular fibrillation (1 out of 4 cases, 25.00%) and sinus bradycardia (1 out of 16 cases, 6.25%). Results had been shown in Figure 1-8.

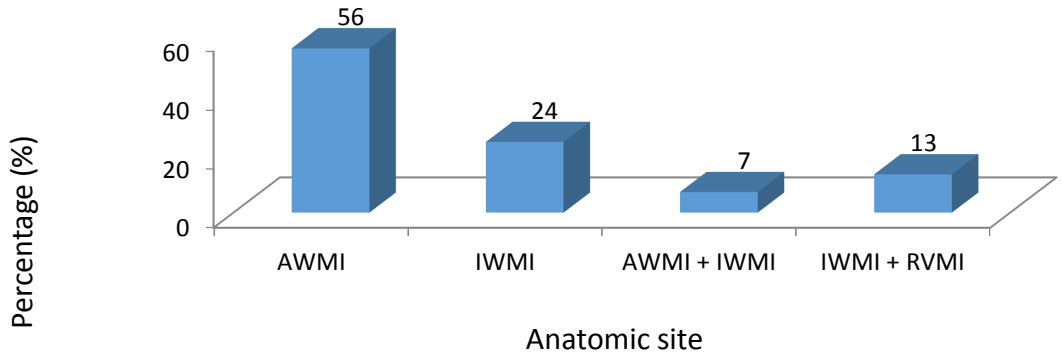

Figure 1: Showing Incidence of Arrhythmias in Relation to Anatomic Site of Myocardial Infarction.

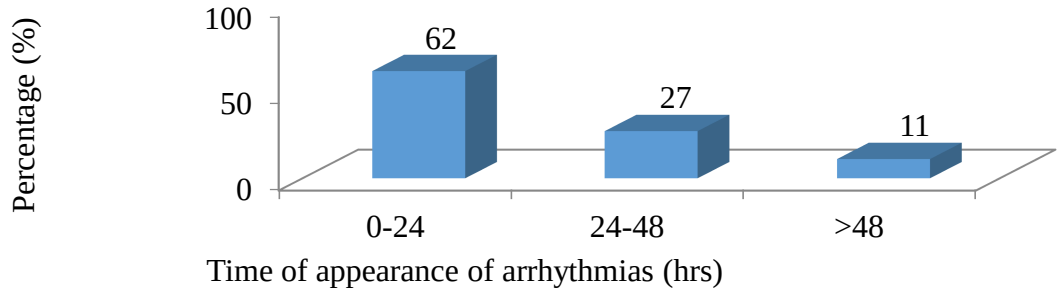

Figure 2: Showing Time of Appearance of Arrhythmias After Hospitalization.

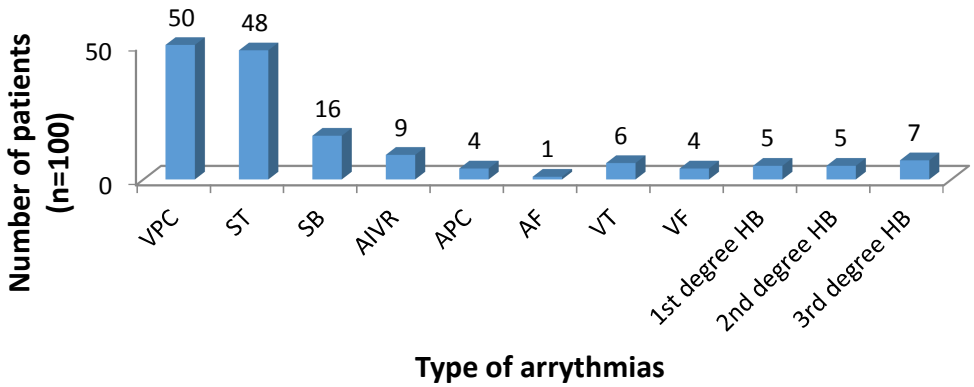

Figure 3: Showing Types of Arrhythmias Seen in Acute Myocardial Infarction.
(*Multiple types of arrhythmias were present in different time frames (i.e. Patient can progress from one type of arrhythmia to another type of arrhythmia)

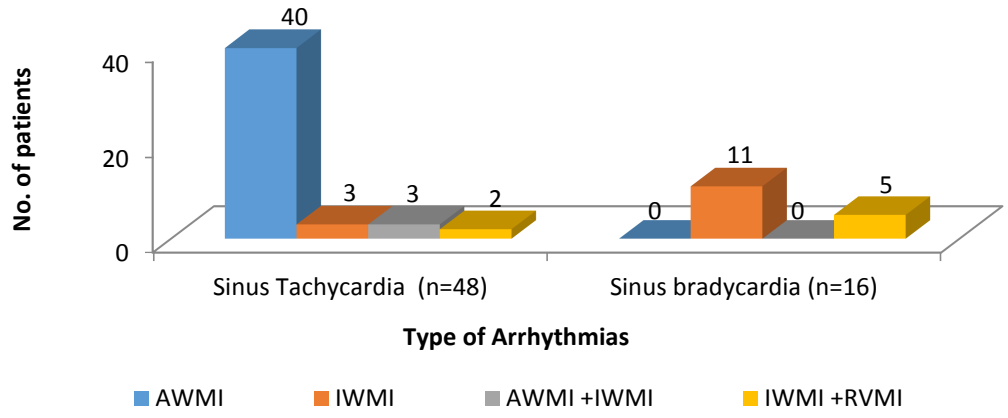

Figure 4: Showing Relationship of Rate Disturbances Developed at SA Node To Anatomical Site Of MI.

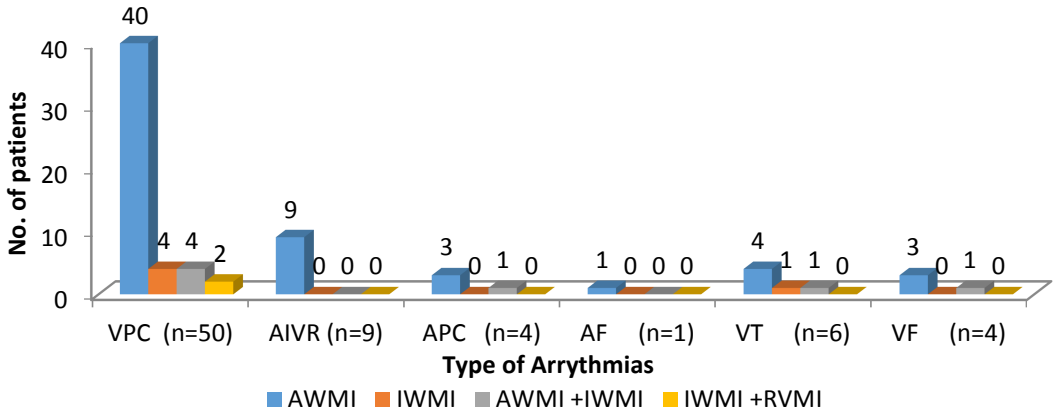

Figure 5: Showing Incidence of Tachyarrhythmias in Relation to Anatomical Site of MI.

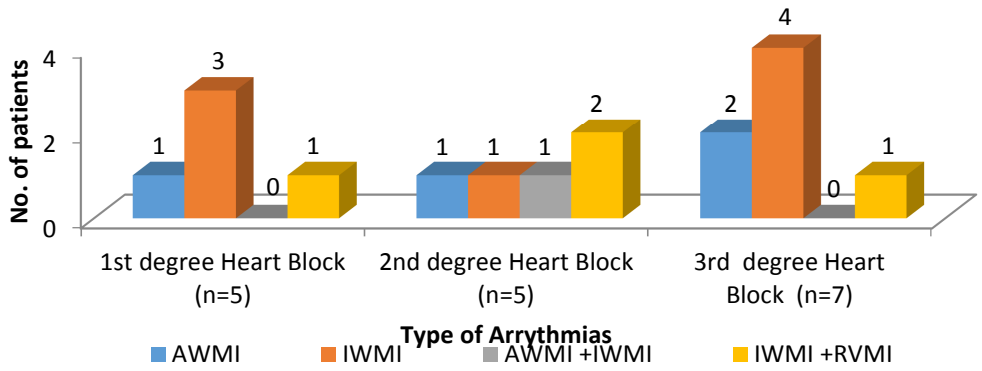

Figure 6: Showing Incidence of Various Bradyarrhythmias in Relation to Anatomical Site of MI.

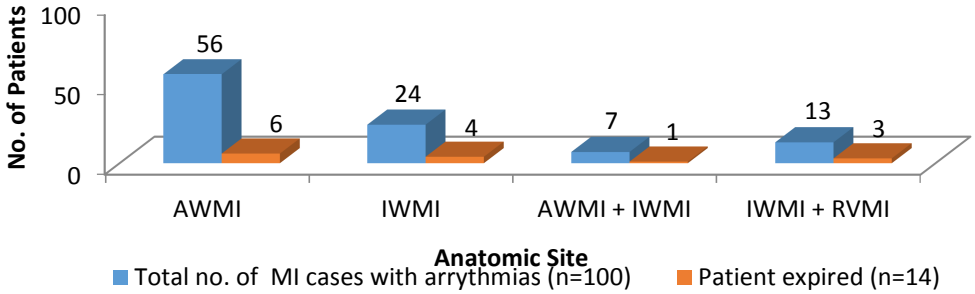

Figure 7: Showing Mortality In Acute Myocardial Infarction Complicated By Arrhythmias.

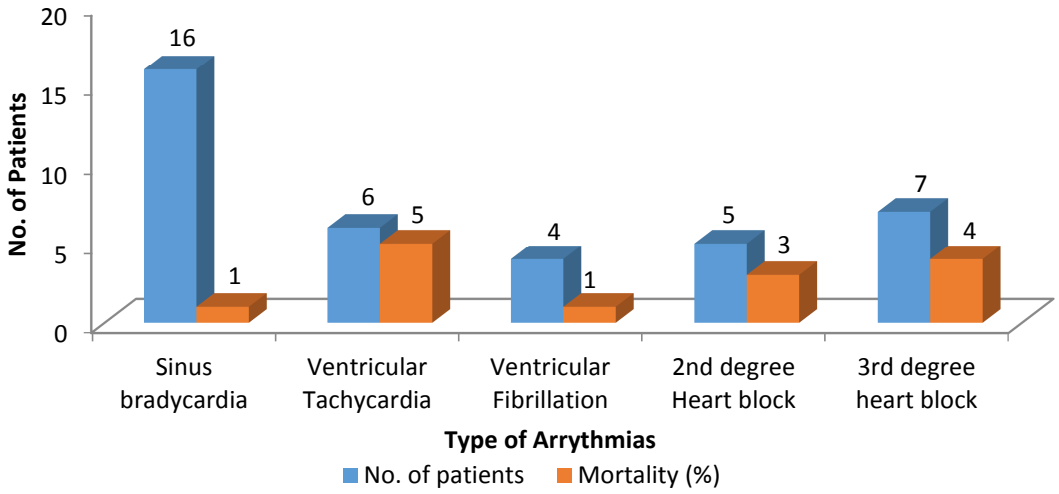

Figure 8: Showing Mortality versus Specific Arrhythmias.

DISCUSSION

About 90% of patients who have an acute myocardial infarction (AMI) develop some form of cardiac arrhythmia during or immediately after the event. In 25% of patients, such rhythm abnormalities manifest within the first 24 hours. In this group of patients, the risk of serious arrhythmias, such as ventricular fibrillation, is greatest in the first hour and declines thereafter.[14]

In the present study of 100 MI patients with arrhythmias, incidence was more in males (57%) as compared to females (43%). The present study findings are consistent with Koek HL et al[15] which showed a higher incidence in men than in women in all age groups, but the male-to-female ratio decreased after the age of a 50-59 year. Women develop coronary disease less often and later as compared to males, due to the relative protection conferred by estrogen. This, however, incomplete and wears off with increasing age, especially after menopause making coronary disease the leading cause of death among women.[16]

According to age wise distribution, maximum incidence of arrhythmias in acute myocardial infarction belong to the age group 51-60 years (34%), followed up by 41-50 years (23%), 61-70 years (20%), ≥71 years (17%) and 31-40 years (6%). The mean age of all the patients was 59 ±12 years. Age incidence is almost similar to the studies done by Marthin TC et al[17] and Shah MJ et al[18] where 85% patients were between 35 and 75 years old. Age incidence is most likely more common because of lifestyle, economic status, and multiple risk factors. The age and gender distribution in the present study were similar to that observed in various other studies by Lincoff AM et al[19] and Boucher JM et al.[20] Almost similar findings were observed in the Framingham Heart Study.[21]

Smoking was the most significant risk factor (38%) in our study; followed by diabetes mellitus (35%), hypertension (30%) and prior ischemic heart disease (28%). Male preponderance and smoking being the major risk factor as seen in the study by Yusuf et al.[22] It correlated with the study conducted by Abidov A et al[23] where 43-47% patients were smokers and 20-24% had diabetes mellitus. Almost similar findings were observed in the study done by Sushma Pandey SP et al.[24]

In our study of arrhythmia in acute myocardial infarction, the majority (56%) of the patients had AWMI, followed by IWMI (24%), IWMI + RVMI (13%) and AWMI + IWMI (7%). Our study showed that anterior wall myocardial infarction is a common site of presentation (56%) as corroborated in a study by Shah MJ et al[18] and Deshpandey JD et al[25] This is comparable to the study by Siddique MB et al[26] which showed 52% AWMI and 48% IWMI.

In the present study, 62% of patients developed arrhythmias in one or the other form within the 1st 24 hours of admission, while 27% in next 24 hours and 11% after 48 hours of admission to hospital. These results are comparable to study by Nagabhushana S et al[27] and Shah MJ et al.[18]

In our study incidence of VPC's was 50%. Of the total 50 VPCs, the majority of the VPCs (80%) were seen in AWMI; while 8% of the VPCs in IWMI, 8% of the VPCs in AWMI + IWMI and 4% in IWMI + RVMI. This finding was highly statistically significant with P-value < 0.01. This is in concordance with the study of Rathod S et al[28] and Campbell RW et al.[29]

In our study incidence of VT was 6%. The findings are comparable with that of Jewitt DE et al[30] and Julian DG et al.[31] Similar results was seen in a study by Rathod S et al[28] and Maggioni AP et al.[32]

In our study incidence of ventricular fibrillation was 4%, of which 25% (1 out of 4) patients died during

first 48 hours of hospitalization. The incidence of Ventricular fibrillation varies from 2 – 6.5 % in various studies.[18,28,33] Mortality was higher in patients with ventricular fibrillation as studied by Goldberg RJ et al.[34]

In our study incidence of sinus tachycardia was 48%, of which 40 cases occurred with AWMI (40 out of 48 cases, 83.33%), 3 cases each (3 out of 48 cases, 6.25%) with IWMI as well as AWMI + IWMI, and 2 cases with IWMI + RVMI (2 out of 48 cases, 4.16%). This finding was statistically significant with P-value < 0.01. It varies from 43-72 % in various studies.[27,28,31,35] Similar results were seen in a study by Julian DG et al[31] and Nagabhushana S et al.[27]

In our study incidence of APC's was 1%, the incidence of APC's varies from 2.9%-16.3 % in various studies.[18,28,30,35,36] The findings of present study are comparable to that of Jewitt DE et al[30] and Shah MJ et al[18] Similar results was seen in a study by Rajagopalan RS et al[35] and Sloman G et al.[36] The incidence of atrial fibrillation was 1% in our study while the incidence of atrial fibrillation varies from 1-4 % in various studies.[18,28]

In our study incidence of sinus bradycardia was 16%, of which 11 occurred in association with IWMI and 5 occurred with IWMI + RVMI, so it was more common in the former with a P-value of < 0.01 showing high statistical significance. Similar observations were made by Rotman M et al[37] and Sloman G et al.[36] Another study by Podrid PJ[38] and Rathod S et al[28] also showed similar results.

In our study incidence of first-degree AV block was 5%; the incidence of first degree AV block varies from 2 – 6.5 % in various studies.58,61 The findings are comparable with the study of Shah MJ et al[18] and Rathod S et al.[28] The incidence of second-degree AV block was 5% in our study, while the incidence of second-degree AV block varies from 3.6 – 8.85 % in various studies.[28,36,39] The findings are comparable with the study of Rathod S et al[28] and Sloman G et al.[36] Another study by Kurland GS et al[39] also showed similar results. In our study incidence of complete heart block was 7%, which is similar to that observed by Harpez D et al.[40] The incidence of complete heart block varies from 3.2 – 6 % in various studies.[18,28,30,40,41] The findings are comparable with studies of Jewitt DE et al[30] and Rathod S et al.[28] Another study by Harpez D et al[40] and Goldberg RJ et al[41] also showed similar results.

CONCLUSION

As coronary artery disease continues to be prevalent in today society, it is imperative to ensure that all patients with MI are optimally treated for ongoing ischemia to prevent life-threatening complications like arrhythmias. Diligent monitoring for arrhythmias and instituting appropriate treatment can be life-saving.

REFERENCES

1. Aufderheide TP. Arrhythmias associated with acute myocardial infarction and thrombolysis. Emerg Med Clin North Am. 1998;16(3):583–600.
2. Podrid PJ. Ventricular arrhythmias after acute myocardial infarction, incidence and clinical features. BJMU. 2006;1–8.
3. Archbold RA, Sayer JW, Ray S, Wilkinson P, Ranjadayalan K, Timmis AD. Frequency and prognostic implications of conduction defects in acute myocardial infarction since the introduction of thrombolytic therapy. Eur Heart J. 1998;19(6):893–8.
4. Fluck DC, Olsen E, Pentecost BL, Thomas M, Fillmore SJ, Shillingford JP, et al. Natural history and clinical significance of arrhythmias after acute cardiac infarction. Br Heart J. 1967;29(2):170–89.
5. Dubois C, Piérard LA, Smeets JP, Foidart G, Legrand V, Kulbertus HE. Short- and long-term prognostic importance of complete bundle-branch block complicating acute myocardial infarction. Clin Cardiol. 1988;11(5):292–6.
6. Alpman A, Güldal M, Erol C, Akgün G, Kervancioglu C, Sonel A, et al. The role of arrhythmia and left ventricular dysfunction in patients with acute myocardial infarction and bundle branch block. Jpn Heart J. 1993;34(2):145–57.
7. Hindman MC, Wagner GS, JaRo M, Atkins JM, Scheinman MM, DeSanctis RW, et al. The clinical significance of bundle branch block complicating acute myocardial infarction. 1. Clinical characteristics, hospital mortality, and one-year follow-up. Circulation. 1978;58(4):679–88.
8. Lie KI, Wellens HJ, Schuilenburg RM, Becker AE, Durrer D. Factors influencing prognosis of bundle branch block complicating acute antero-septal infarction. The value of his bundle recordings. Circulation. 1974;50(5):935–41.
9. John KA. A history of cardiac arrhythmias. In: arrhythmias. 2nd edition: WB Saunders Company; 2000.
10. Arsenos P, Gatzoulis K, Dilaveris P, Manis G, Tsiachris D, Archontakis S, et al. Arrhythmic sudden cardiac death: substrate, mechanisms and current risk stratification strategies for the post-myocardial infarction patient. Hellenic J Cardiol. 2013;54(4):301–15.
11. Pizzetti F, Turazza FM, Franzosi MG, Barlera S, Ledda A, Maggioni AP, et al. Incidence and prognostic significance of atrial fibrillation in acute myocardial infarction: the GISSI-3 data. Heart Br Card Soc. 2001;86(5):527–32.
12. Rathore SS, Berger AK, Weinfurt KP, Schulman KA, Oetgen WJ, Gersh BJ, et al. Acute myocardial infarction complicated by atrial fibrillation in the elderly: prevalence and outcomes. Circulation. 2000;101(9):969–74.
13. Goldstein JA, Lee DT, Pica MC, Dixon SR, O'Neill WW. Patterns of coronary compromise leading to bradyarrhythmias and hypotension in inferior myocardial infarction. Coron Artery Dis. 2005;16(5):265–74.
14. Grasso AW, Brener SJ. Complications of acute myocardial infarction. The Cleveland Clinic Foundation: Center for Continuing Education [Internet]. 2014 [cited 2016 Sep 27]. Available from: http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/cardiology/complications-of-acute-myocardial-infarction/
15. Koek HL, de Bruin A, Gast A, Gevers E, Kardaun JWPF, Reitsma JB, et al. Incidence of first acute myocardial infarction in the Netherlands. Neth J Med. 2007;65(11):434–41.
16. WHO. The top 10 causes of death [Internet]. 2014 [cited 2016 Oct 5]. Available from: http://www.who.int/mediacentre/factsheets/fs310/en/

17. Martin TC, Van Longhuyzen H, Bennett B, Peterson S, Beazer C, Thomas CV. The age-specific incidence of admission to the intensive care unit for acute myocardial infarction in Antigua and Barbuda. West Indian Med J. 2007;56(4):326–9.
18. Shah MJ, Bhatt NR, Dabhi A, Thorat PB, Chudasama K, Patel J. A study of 100 cases of arrhythmias in first week of acute myocardial infarction (AMI) in Gujarat: A high risk and previously undocumented population. J Clin Diagn Res. 2014;8(1):58–61.
19. Lincoff AM, Califf RM, Ellis SG, Sigmon KN, Lee KL, Leimberger JD, et al. Thrombolytic therapy for women with myocardial infarction: is there a gender gap? Thrombolysis and Angioplasty in Myocardial Infarction Study Group. J Am Coll Cardiol. 1993;22(7):1780–7.
20. Boucher J-M, Racine N, Thanh TH, Rahme E, Brophy J, LeLorier J, et al. Age-related differences in in-hospital mortality and the use of thrombolytic therapy for acute myocardial infarction. Can Med Assoc J. 2001;164(9):1285–90.
21. Lerner DJ, Kannel WB. Patterns of coronary heart disease morbidity and mortality in the sexes: a 26-year follow-up of the Framingham population. Am Heart J. 1986;111(2):383–90.
22. Yusuf S, Pearson M, Sterry H, Parish S, Ramsdale D, Rossi P, et al. The entry ECG in the early diagnosis and prognostic stratification of patients with suspected acute myocardial infarction. Eur Heart J. 1984;5(9):690–6.
23. Abidov A, Kaluski E, Hod H, Leor J, Vered Z, Gottlieb S, et al. Influence of conduction disturbances on clinical outcome in patients with acute myocardial infarction receiving thrombolysis (results from the ARGAMI-2 study). Am J Cardiol. 2004;93(1):76–80.
24. Pandey S, Pandey S, Jhanwar P, Jhanwar A. A prospective study of myocardial infarction patients admitted in a tertiary care hospital of south-eastern rajasthan. Int J Biol Med Res. 2012;3(2):1694-96.
25. Deshpandey JD, Dixit JV. Hospital based study of clinical profile and risk factors for acute myocardial infarction. Indian Med Gaz. 2009;380–2.
26. 26. Siddique MB, Fazal I, Ejaz A, Awan ZI. Frequencies and patterns of arrhythmias in anterior and inferior myocardial infarction. Pak Arm Forc Med J. 2009;11(4):45–53.
27. S N, GK RK, M R, V. Study of arrhythmias in acute myocardial infarction. Int J Med Res Rev. 2015;3(7):682–90.
28. Rathod S, Parmar P, Rathod GB, Parikh A. Study of various cardiac arrhythmias in patients of acute myocardial infarction. IAIM. 2014;1(4):32–41.
29. Campbell RW, Murray A, Julian DG. Ventricular arrhythmias in first 12 hours of acute myocardial infarction. Natural history study. Br Heart J. 1981;46(4):351–7.
30. Jewitt DE, Balcon R, Raftery EB, Oram S. Incidence and management of supraventricular arrhythmias after acute myocardial infarction. Lancet. 1967;2(7519):734–8.
31. Julian DG, Valentine PA, Miller GG. Disturbances of rate, rhythm and conduction in acute myocardial infarction: a prospective study of 100 consecutive unselected patients with the aid of electrocardiographic monitoring. Am J Med. 1964;37:915–27.
32. Maggioni AP, Zuanetti G, Franzosi MG, Rovelli F, Santoro E, Staszewsky L, et al. Prevalence and prognostic significance of ventricular arrhythmias after acute myocardial infarction in the fibrinolytic era. GISSI-2 results. Circulation. 1993;87(2):312–22.
33. Kundu SC, Bhattacharjee TD, Banerjee D, Bose D, Ghosh S. Profile of myocardial infarction among the railroad workers in Eastern India-a 6-year study. Indian Heart J. 1982;34(3):151–5.
34. Goldberg RJ, Yarzebski J, Spencer FA, Zevallos JC, Lessard D, Gore JM. Thirty-year trends (1975-2005) in the magnitude, patient characteristics, and hospital outcomes of patients with acute myocardial infarction complicated by ventricular fibrillation. Am J Cardiol. 2008;102(12):1595–601.
35. Rajagopalan RS, Appu KS, Sultan K, Jagannadhan TG, Nityanandan K, Sethuraman S. Acute cardiac infarction treated in an intensive coronary care unit. Indian Heart J. 1972;24(2):92–100.
36. Sloman G, Prineas RJ. Major cardiac arrhythmias in acute myocardial infarction: Implications for longterm survival. Chest. 1973;63(4):513–6.
37. Rotman M, Wagner GS, Wallace AG. Bradyarrhythmias in acute myocardial infarction. Circulation. 1972;45(3):703–22.
38. Podrid PJ. Arrthymias after acute myocardial infarction. Postgrad Med. 1997;102(5):679–88.
39. Kurland GS, Pressman D. The incidence of arrhythmias in acute myocardial infarction studied with a constant monitoring system. Circulation. 1965;31(6):834–41.
40. Harpaz D, Behar S, Gottlieb S, Boyko V, Kishon Y, Eldar M. Complete atrioventricular block complicating acute myocardial infarction in the thrombolytic era. SPRINT Study Group and the Israeli Thrombolytic Survey Group. Secondary Prevention Reinfarction Israeli Nifedipine Trial. J Am Coll Cardiol. 1999;34(6):1721–8.
41. Goldberg RJ, Zevallos JC, Yarzebski J, Alpert JS, Gore JM, Chen Z, et al. Prognosis of acute myocardial infarction complicated by complete heart block (the Worcester Heart Attack Study). Am J Cardiol. 1992;69(14):1135–41.

How to cite this article: Agarwal S, Singh P, Sikri T, Neki NS. The Study of Arrhythmias in the First Week of Myocardial Infarction. Ann. Int. Med. Den. Res. 2017; 3(1):ME35-ME41.

Source of Support: Nil, **Conflict of Interest:** None declared