Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/16619
DOI URL: http://dx.doi.org/10.21474/IJAR01/16619

RESEARCH ARTICLE

THE STUDY OF CONDUCTION BLOCKS IN ACUTE MYOCARDIAL INFARCTION PATIENTS ADMITTED IN TERTIARY CARE HOSPITAL IN CENTRAL INDIA: A PROSPECTIVE OBSERVATIONAL STUDY

Dr. Pooja Borlepawar and Dr. Pravin Shingade

Manuscript Info

Manuscript History
Received: 05 February 2023
Final Accepted: 09 March 2023
Published: April 2023

Key words:-
Acute Myocardial Infarction, Conduction blocks, STEMI, Non-Survivors, Killip's Class, Dyslipidemia

Abstract

Background: Acute Myocardial infarction (AMI) is one of the most fatal diseases of human community. Various types of conduction blocks (CB) develop following an AMI. Hence the present study was undertaken to study the various types of conduction blocks in acute ST elevation myocardial infarction (STEMI) patients admitted in Tertiary care hospital in central India.

Method: A total 140 patients of age ≥18 years with symptoms and signs suggestive of AMI having ECG changes consistent with STEMI and rise in cardiac markers presenting with conduction disturbances were included in the study.

Results: Among the 140 patients, 62.2% survived, 37.8% were non-survivors.Highest incidence of conduction blocks (28.57%) and maximum non-survivors (22.64%) were in age group of 51-60 years. Most common risk factor among non survivors was HTN+Dyslipidemia 70%, followed by HTN+ DM+ Dyslipidemia (69.23%). Among 22 non-survivors in AWMI, maximum non-survivors seen in killip's class 2. In IWMI out of 17 non-survivors, 10(53.8 %) seen in killip's class 1. In ALWMI 3 (75%) non-survivors seen in killip's class 1. In ASWMI maximum non-survivors 4(66.7%) seen in killip's class 3. In IRPWMI non survivors seen in class 2,3,4 (33.33% each). In patients with QRBBB maximum non-survivors seen in killip's class 2. Maximum non-survivors seen in killips class1 seen the in patients with CHB. Multivariate analysis of variables showed that patients having CHB, first degree AV block, QRBBB and patients with killip's class4 have significant independent prediction for in hospital non-survivors. Highest Non-survivors in QRBBB (41.51%) and in AWMI (52.83%).

Conclusion: The conduction blocks are associated with higher in-hospital mortality rate and are important predictors of poor outcome in patients with AMI (STEMI).

Introduction:-

Acute myocardial infarction (AMI) is a global epidemic and a major public problem due to its leading cause of mortality and morbidity [1].AMI is characterized by generalized autonomic dysfunction that results in enhanced automaticity of the myocardium and conduction system. Electrolyte imbalance and ongoing ischemia which results

Corresponding Author:- Dr. Pooja Borlepawar

in hypoxia of the conduction system further contribute to the development of conduction blocks and cardiac arrhythmias. Various types of conduction blocks develop following an acute MI. Heart block, such as atrioventricular (AV) and intraventricular blocks, are among the most important electrical disturbances which occur following acute myocardial infarction (STEMI) [2, 3].In these settings, delayed conduction may occur as a consequence of physiological phenomena or pathological processes with varying incidence rates in different populations (first-degree AV block 2-12%, second-degree AV block 3-10%, third-degree AV block 3- 7%) [4]. It has been confirmed that these conduction disturbances are associated with an increased in-hospital mortality rate. On the other hand, it has been stated that these abnormalities do not predict long-term mortality in patients who survive and are discharged from the hospital after AMI. Hence, the important finding of heart block in patients with STEMI has some remarkable prognostic implications [5].

Knowledge of the anatomy of conducting system and its blood supply is important in understanding the significance of the association between the type of infarction, site, and the Degree of conduction disturbance. The presence of conduction defects complicating acute MI, is relatively frequent and it is associated with increased short term mortality rates. Bundle branch blocks in STEMI carry a poor prognosis. This is attributed both to the extent of myocardial damage and to the frequency of ventricular asystole. The development of conduction blocks worsens the outcome of STEMI [6]. Thrombolytic therapy and early reperfusion of the myocardium by PCI have been established to reduce mortality in AMI. The prognostic significance and management of these disturbances may vary with the location of the infarction, type of conduction blocks, associated clinical features, and the hemodynamic compromise [7].

Defining the incidence and prognostic significance of new conduction abnormalities associated with STEMI is complicated for several reasons. Data are most commonly generated from retrospective reviews or sub-analyses of clinical trial data. Much of the data on brady-arrhythmias and BBB predate the development of primary reperfusion therapies (thrombolysis and primary percutaneous coronary intervention). By reducing infarct size, these therapies may also reduce the incidence of new conduction abnormalities, although the prognostic significance of new conduction abnormalities, when they occur, may be similar [8]. The present study was aimed at observing patterns of various CB and their prognostic implications in STEMI.

Material and Method:-

After obtaining Institutional Ethical Committee approval and written informed consent from all the patients, this hospital based observational study was conducted in Tertiary care hospital in central India during a period from November 2020 to October 2022. A total 140 patients of age ≥18 years with symptoms and signs suggestive of AMI having ECG changes consistent with STEMI and rise in cardiac markers presenting with conduction disturbances admitted in intensive care unit, who were scheduled for treatment were included in the study. ECG changes consistent with STEMI includes:- 2018 ESC/ACC/AHA/ World Health Federation Universal define STEMI in ECG with New ST Segment elevation at the J point in two contiguous leads (v1 v2 v3 with v6 or lead II, III, aVF with lead I &aVL, rv4-rv6, with the cut points: more than or equal to 1 mm in all leads other than leads v2-v3 and 0.5mm ST segment elevation in v7, v8, v9. For leads v2-v3: 1) more than or equal to 2 mm in males more than 40yrs; 2) More than or equal to 2.5 mm males less than 40yrs; 3) More than or equal to 1.5 mm in females regardless of age.

Patients with unstable angina, NSTEMI, previous conduction block, congenital or rheumatic heart disease, cardiomyopathy, with electrolyte abnormality and patients with history of intake of drugs causing CB such as clonidine, methyldopa, verapamil were excluded from the study.

Case definition-

Patients with STEMI having conduction block were considered as case. The diagnosis of various CB was made based on the following ECG features:

- First-degree AVB: PR interval of more than 0.20 s
- Second-degree AVB: Intermittent failure of AV conduction.
- Mobitz Type I: Characterized by Wenckebach cycle, beginning with normal or prolonged PR interval and, with each successive beat, the PR interval lengthens until the block of the supraventricular impulse occurs and a beat is dropped. The pause is shorter than the PR interval of any two consecutively conducted beats. The shortest PR interval follows, and the longest PR interval precedes the ventricular pause.

- Mobitz Type II: There is an intermittent failure of AV conduction, but the PR intervals of all the conducted supraventricular impulses are constant.
- Third-degree or complete AVB:
  It is characterized by:

1. AV dissociation: “P” waves bear no relationship to QRS complexes.
2. Slow ventricular rate: Usually in the range of 30-35 bpm if subsidiary pacemaker is situated in ventricles and in the range of 35-40 bpm if subsidiary pacemaker is situated in the lower AV node (i.e., below the block) or in the bundle of His.
3. QRS configuration: If subsidiary pacemaker is situated in the lower AV node (i.e., below the block) or in the bundle of His, QRS configuration is normal or near normal and it is abnormal, being broad, notched, slurred, and bizarre if the pacemaker is situated in the ventricular musculature.

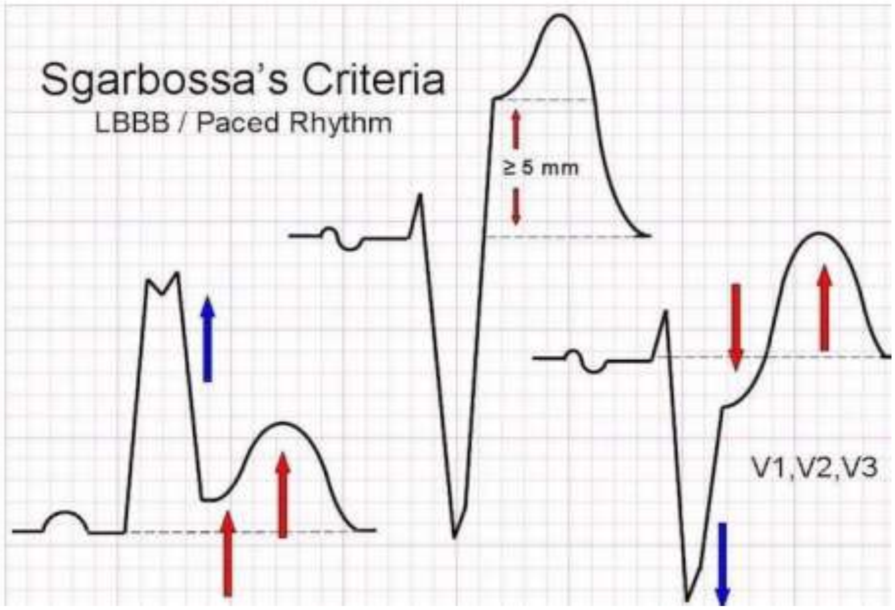
- Left anterior hemiblock (LAHB)
- Frontal planes mean QRS axis of −45° to −90°
- QRS duration less than 120 ms
- qR pattern in leads I and aVL
- Late intrinsicoid deflection in aVL (>0.45 s)
- RS pattern in leads II, III, and aVF.
- Left posterior hemiblock (LPHB)
- Frontal planes mean QRS of ≥+120°
- QRS duration of 0.045 s)
- Exclusion of other causes of right axis deviation.

LBBB:

Features of complete LBBB:

1. QRS duration ≥ 120 ms
2. Broad, notched “R” waves in lateral precordial leads (V5 and V6) and usually in leads I and aVL
3. Absent septal “q” waves in left-sided leads
4. Small or absent initial “r” waves in right precordial leads (VI and V2) followed by deep “S” waves.
5. Prolonged intrinsicoid deflection (>60 ms) in V5 and V6. Features of incomplete LBBB:
6. Loss of septal “q” waves
7. Slurring and notching of the upstroke of “R” waves
8. Modest prolongation of the QRS complex (between 100 and 120 ms)
9. Right bundle branch block (RBBB). Features of complete RBBB:
10. QRS duration ≥120 ms
11. Broad, notched “R” waves (“rsr,” “rsR,” or “rSR” pattern) in right precordial leads (VI and V2)
12. Wide and deep “S” waves in left precordial leads (V5 and V6). Incomplete RBBB:
13. “RSr” pattern in lead V1 with a QRS duration between 100 and 120 ms. RBBB plus LAHB:
14. Characterized by ECG pattern of RBBB plus left axis deviation beyond −45°. RBBB plus LPHB:
15. Characterized by ECG pattern of RBBB plus a mean QRS axis deviation to the right of +120°.

The original three criteria used to diagnose infarction in patients with LBBB were: 1) Concordant ST elevation > 1mm in leads with a positive QRS complex (score 5); 2) Concordant ST depression > 1 mm in V1-V3 (score 3); 3) Excessively discordant ST elevation > 5 mm in leads with a -ve QRS complex (score 2). These criteria were specific, but not sensitive (36%) for myocardial infarction. A total score of ≥ 3 is reported to have a specificity of 90% for diagnosing myocardial infarction.



Smith-Modified Sgarbossa Criteria

The modified rule is positive for "STEMI" if there is discordant ST elevation with amplitude > 25% of the depth of the preceding S-wave.

1. Concordant ST elevation ≥ 1 mm in ≥ 1 lead
2. Concordant ST depression ≥ 1 mm in ≥ 1 lead of V1-V3
3. Proportionally excessive discordant STE in ≥ 1 lead anywhere with ≥ 1 mm STE, as defined by ≥ 25% of the depth of the preceding S-wave.

Heart failure in STEMI patients is classified as:

Killip's classification for acute myocardial infarction:

1. CLASS 1: No evidence of heart failure
2. CLASS 2: findings consistent with mild to moderate heart failure (eg. s3 gallop, lung rales less than half of posterior lung fields or jugular venous distention.
3. CLASS 3: overt pulmonary edema.
4. CLASS 4: cardiogenic shock.

A detailed history and past medical history, including cardiovascular risk factors and comorbidities were collected. The demographic data and presenting complains were noted. Pulse rate, Blood Pressure, and Respiratory rate was measured at the time of admission. The clinical and systemic examination and routine laboratory investigations were done including cardiac biomarkers – (troponin-I / CPKMB), serum electrolytes (sodium, potassium) and lipid profile (total cholesterol, triglycerides, HDL, LDL). Complete blood count, Liver Function test, Kidney function test, Serum sodium and potassium level, ECG on admission were done in all subjects of study. Further investigations were performed according to case-to-case basis. ECG were recorded on admission and follows patient outcome during hospitalization. All admitted patients were treated as per standard treatment guidelines.

Statistical Analysis

The data was tabulated in Microsoft Excel and analyzed with SPSS V.24 software. The continuous variables were presented with mean and standard deviation. The categorical variables were presented with frequency and percentage. Chi square test was used for comparison between various groups and subgroups. The p value≤0.05 was considered as statistically significant.

Observation and Results:-

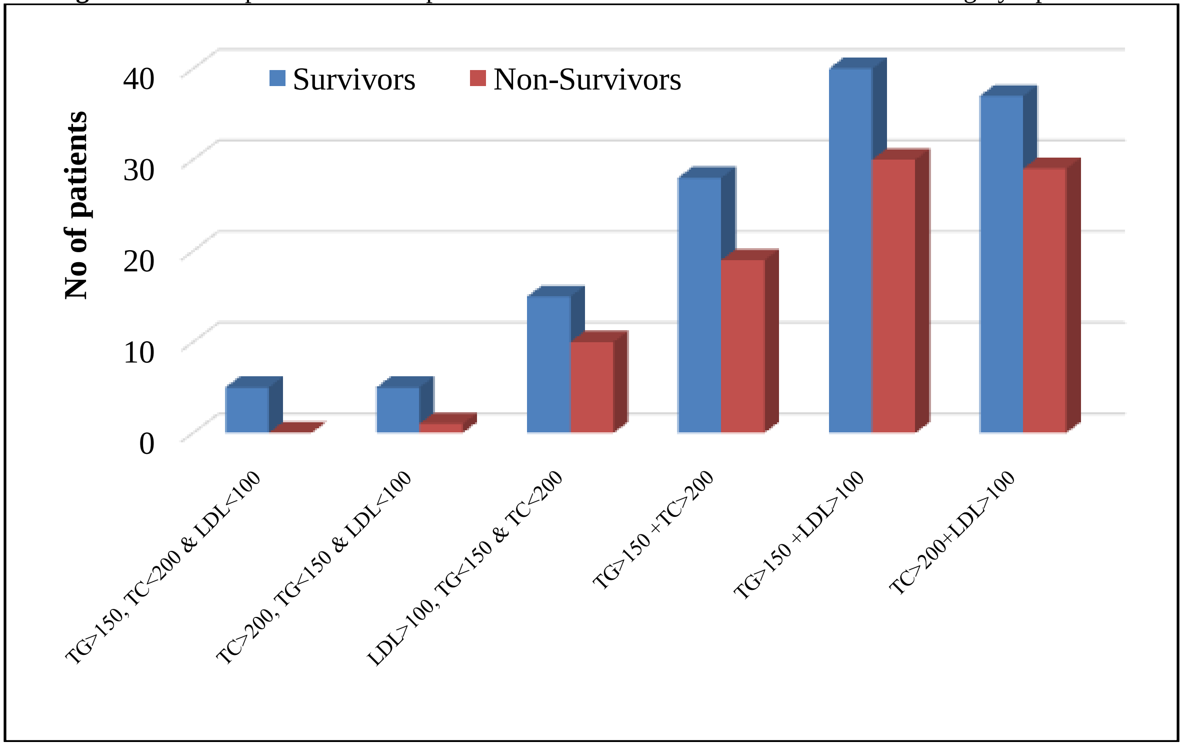
All the 140 patients were treated with STK in hospital and out of 140, 83(62.2%) were survivors and 57 non-survivors i.e. (37.8%).Highest incidence of conduction blocks (28.57%) and maximum non-survivors (22.64%) were in age group of 51-60 years. Out of 140 patients, 100 were males and 40 were females. The mean age of presentation was 56.35 years with a range of 25-90 years. Ratio of Non-survival in Male to Non-survival in Female was 3.07:1 (Table 1).

Table1:- In hospital outcome in different age groups and gender

Demographic data		Survivor	Non-survivor
Age in years	18-30	2 (2.30%)	2 (3.77%)
	31-40	12 (13.79%)	8 (15.09%)
	41-50	14 (16.09%)	10 (18.87%)
	51-60	28 (32.18%)	12 (22.64%)
	61-70	21 (24.14%)	8 (15.09%)
	71-80	9 (10.34%)	11 (20.75%)
	>80	1 (1.15%)	2 (3.77%)
Gender	Male	60 (68.97%)	40 (75.47%)
	Female	27 (31.03%)	13 (24.53%)

Most common risk factor among non survivors was HTN+ Dyslipidemia 70%, (p=0.011), followed by HTN+ DM+ Dyslipidemia (69.23%) with significant p value 0.049. Non survivors with other risk factors like HTN, DM, DYSLIPIDEMIA ALCOHOL alone and more than 2 risk factors did not find statistical significance. Out of 140 patients ,3 (2.14%) patients did not have any comorbidity.Maximum non-survivors (56.6%) seen in patients having TG>150mg% and LDL>100 mg% with no statistical significance as depicted in figure 1.

Figure 1:- In hospital outcome of patients of conduction block with of STEMI having dyslipidemia.



Among 22 non-survivors in AWMI, maximum non-survivors seen in killip's class 2. In IWMI out of 17 non-survivors, maximum non-survivors 10 (53.8 %) seen in killip's class 1. In ALWMI 3 (75%) non-survivors seen in killip's class 1. In ASWMI maximum non-survivors 4 (66.7%) seen in killip's class 3. In IRPWMI non survivors seen in class 2,3,4 (33.33% each), (Table 2).

Table 2:- In hospital outcome in heart failure patient with different territories of STEMI.

Territory of MI	KILLIPS CLASSIFICATION			
	1	2	3	4

	Surv.	Non-sur.	Surv.	Non-sur.	Surv.	Non-sur.	Surv.	Non-sur.
AWMI	14 (42.4%)	04 (18.1%)	10 (30.3%)	11 (50%)	06 (18.1%)	02 (9.09%)	03 (9.1%)	05 (22.7%)
IWMI	15 (53.6%)	10 (58.8%)	10 (35.7%)	02 (11.8%)	00 (0.0%)	02 (11.7%)	03 (10.7%)	03 (17.6%)
ALWMI	08(66.7%)	03 (75%)	03 (25%)	00 (0.0%)	01 (8.3%)	01 (25%)	00 (0.0%)	00 (0.0%)
ASWMI	03 (75%)	02 (33.3%)	01 (25%)	00 (0.0%)	00 (0.0%)	04 (66.7%)	00 (0.0%)	00 (0.0%)
IRPWMI	04 (80%)	00 (0.0%)	01 (20%)	01 (33.3%)	00 (0.0%)	01 (33.3%)	00 (0.0%)	01 (33.3%)
PWMI	03 (60%)	01 (100%)	01 (20%)	00 (0.0%)	01 (20%)	00 (0.0%)	00 (0.0%)	00 (0.0%)

In patients with QRBBB, maximum non-survivors seen in killip's class 2. Maximum non-survivors seen in killips class 1 in patients with CHB as shown in table 3.

Table 3:- In hospital outcome in heart failure patient with different types of CB.

Conduction block	**KILLIPS CLASSIFICATION**							
	1		**2**		**3**		**4**	
	Surv.	**Non-sur.**	**Surv.**	**Non-sur.**	**Surv.**	**Non-sur.**	**Surv.**	**Non-sur.**
QRBBB	10	01	04	09	05	07	00	05
CHB	10	07	02	01	00	03	00	04
First degree AV Block	06	10	02	02	01	00	00	00
LBBB	07	01	03	00	00	00	01	00
Incomplete RBBB	04	01	05	00	00	00	00	00
RBBB	02	00	01	02	01	00	04	00
LAFB	01	00	06	00	00	00	00	00
Second degree Type I	04	00	02	00	00	00	00	00
Second degree Type II	03	00	01	00	01	00	01	00

Multivariate analysis of variables showed that patients having CHB, first degree AV block, QRBBB and patients with killip's class4 have significant independent prediction for in hospital non-survivors (with significant p value), (Table 4).

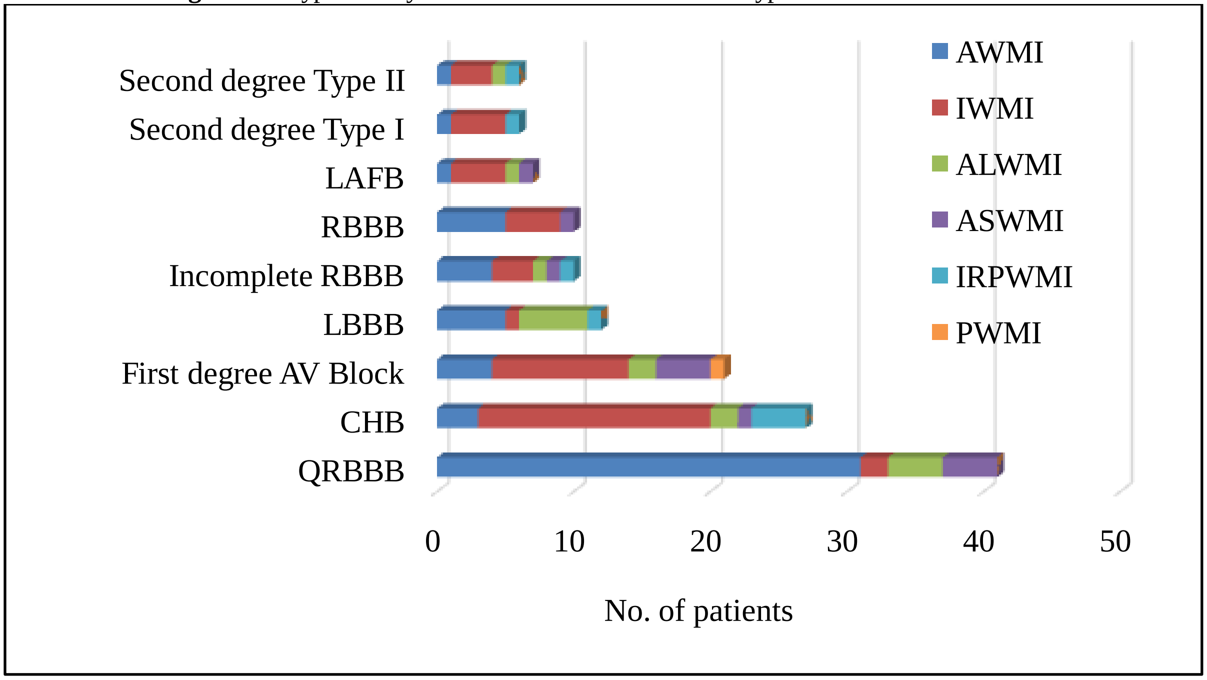
Table 4:- Multiple logistic regression analysis to predict in hospital outcome in patients of STEMI with conduction blocks.

Parameter	**Adjusted Odds Ratio**	**95 % Confidence Interval**	**p-value**
ALWMI	0.82	0.18-3.75	0.802
AWMI	0.77	0.25-2.31	0.643
IRPWMI	1.02	0.12-8.61	0.984
CHB	19.47	3.90-97.06	<0.0001
First degree AV Block	27.40	5.17-145.13	<0.0001
LBBB	1.34	0.10-16.82	0.819
QRBBB	16.25	4.56-57.85	<0.0001
Killip's class 2	2.94	0.94-9.13	0.061
Killip's class 3	2.82	0.78-10.14	0.111
Killip's class 4	8.75	1.82-41.95	0.007

CHB was most common in IWMI, FIRST DEGREE AV BLOCK was most common in IWMI. LBBB was most common in ALWMI, INCOMPLETE RBBB most common in AWMI and IWMI, LAFB was most common in

IWMI, QRBBB was most common in AWMI, RBBB was most common in IWMI and AWMI, SECOND DEGREE TYPE1 was most common in IWMI and SECOND DEGREE TYPE2 was common in IWMI, (p=0.233), (figure 2).

Figure 2:- Types of myocardial infarction in different types of conduction blocks.



Highest Non-survivors in QRBBB (41.51%) and lowest in LAFB, SECOND DEGREE TYPE1 (0.0%) and SECOND DEGREE TYPE2 AV block (0.0%). Highest Non-survivors were in patients with AWMI (52.83%) and lowest in patients with PWMI (0.0%). (Table 5).

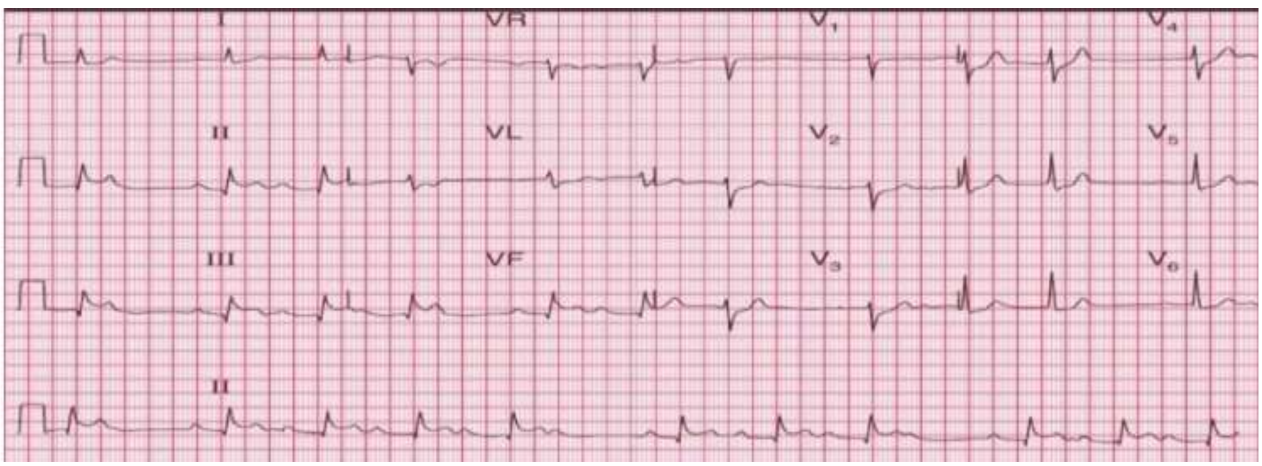
Table 5:- In hospital outcome of patients with type of CBand Types of STEMI.

Type of conduction block and Types of STEMI		**Survivors**	**Non-Survivors**	**P value**
Type of conduction block	QRBBB	19 (21.84%)	22 (41.51%)	0.013
	CHB	12 (13.79%)	15 (28.30%)	0.035
	First degree AV Block	09 (10.34%)	12 (22.64%)	0.048
	LBBB	11 (12.64%)	01 (1.89%)	0.030
	Incomplete RBBB	09 (10.34%)	01 (1.89%)	0.059
	RBBB	08 (9.20%)	02 (3.77%)	0.227
	LAFB	07 (100.0%)	00 (0.0%)	-
	Second degree Type I	06 (100.0%)	00 (0.0%)	-
	Second degree Type II	06 (100.0%)	00 (0.0%)	-
Types of STEMI	AWMI	27 (31.03%)	28 (52.83%)	0.013
	IWMI	29 (33.33%)	16 (30.19%)	0.699
	ALWMI	14 (16.09%)	02 (3.77%)	0.029
	ASWMI	09 (10.34%)	01 (1.89%)	0.089
	IRPWMI	02 (2.30%)	06 (11.32%)	0.026
	PWMI	06 (1.15%)	00 (0.0%)	-

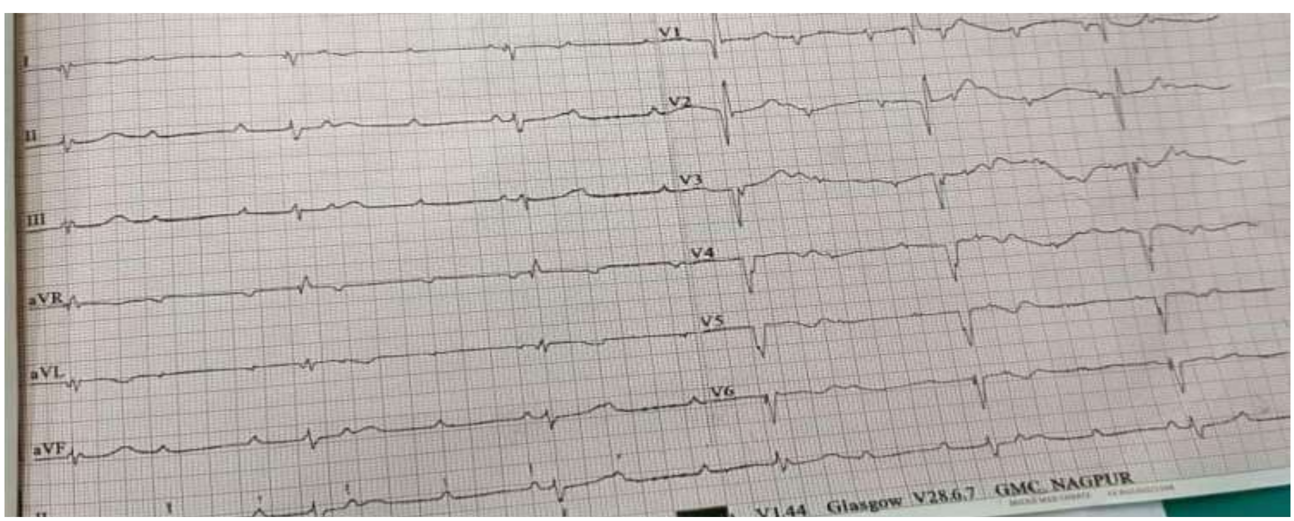
Average duration of hospital stays in survivors having different types of conduction blocks was 5.7 days (4.5-6.5 days) and in non-survivors was 2.4 days (1-3.5 days), (Table 6).

Table 6:- Duration of hospital stay in survivors and non-survivors having different types of conduction block in STEMI patients.

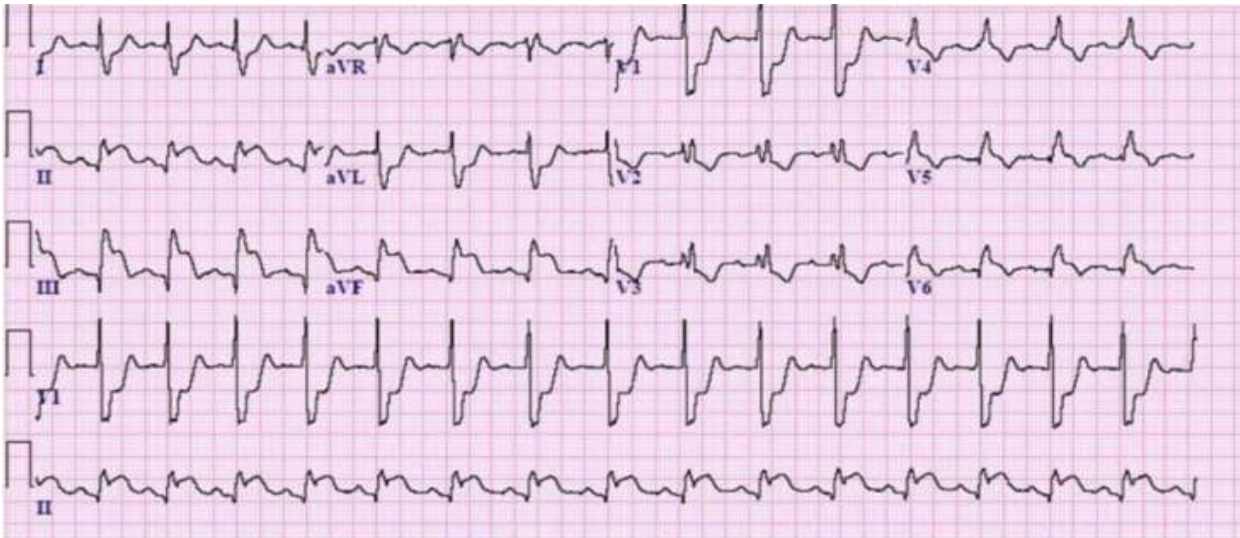
Type of conduction block	**Survivors**	**Non-Survivors**	**P value**
QRBBB	5.42 ± 0.90	2.22 ± 0.92	<0.0001
CHB	6.08 ± 0.26	2.33 ± 0.33	<0.0001
First degree AV Block	5.55 ± 0.88	2.83 ± 1.11	<0.0001
LBBB	5.54 ± 0.82	4 ± 0	-
Incomplete RBBB	5.44 ± 0.72	4.0 ± 0	-
RBBB	5.75 ± 0.88	2.5 ± 2.12	0.0062
LAFB	6.0 ± 0.57	-	-
Second degree Type I	6.0 ± 0.89	-	-
Second degree Type II	6.33 ± 0.81	-	-



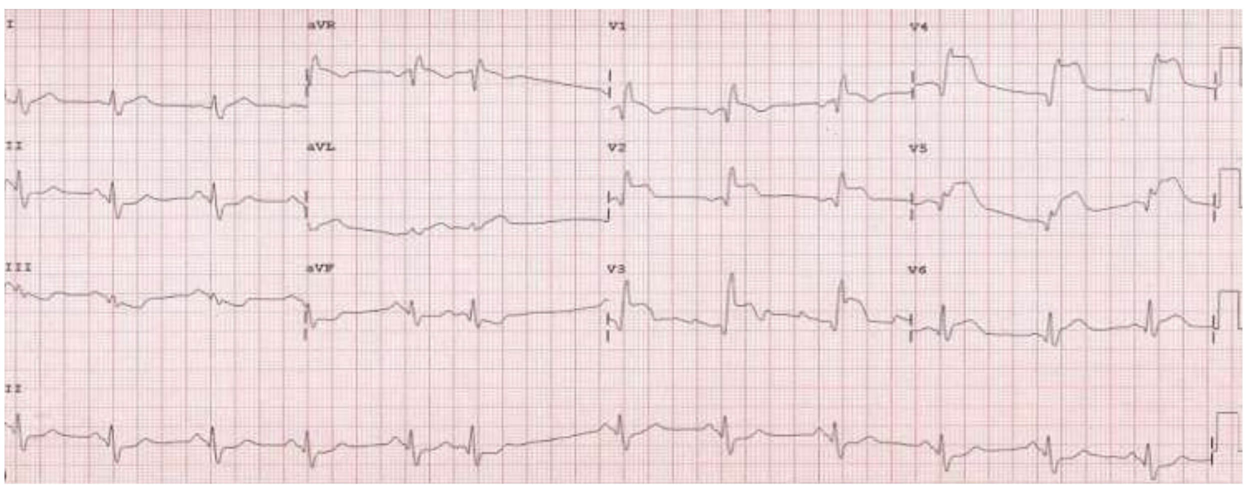
ECG-1: s/o sinus rhythm with HR-75/min with second degree AV block (Wenckebach)with ventricular rate of 70/min with ST elevation in 2,3, aVF with reciprocal changes in 1 AVL s/o inferior wall MI, ST depression in v2-v6(posterior STEMI)



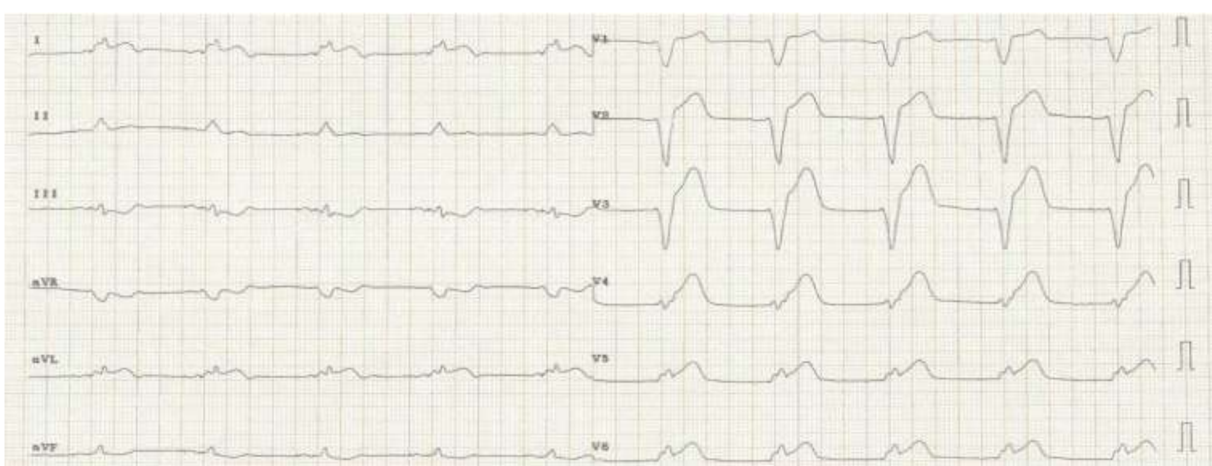
ECG-2:S/O HR-34/ min with QS complexes in v2 to v6 AWMI with av dissociation and constant p-p interval and R-R interval suggestive of complete heart block.



ECG-3: S/o sinus rhythm with HR-90/min with ST elevation in 2 3 AVF with reciprocal changes in 1 AVL (inferior STEMI) with RBBB pattern.



ECG-4: Suggestive of heart rate of 80/min irregular with ST elevation in V1 to V6 (AWMI) with QRBBB pattern.



ECG-05: S/0 Heart rate 60/min, ST elevation in 1 AVL, V1 to V6 with ST depression and T wave inversion in 2,3 AVF suggestive of AWMI with LBBB pattern.

Discussion:-

In the present study, most of the patients were in the age group of 51-60 years (28.7%) and lowest in age group >80 years (2.1%). The mean age of presentation was 56.35 years with a ranged from 25-90 years which is comparable with the previous studies [8-10]. Maximum non survivors were in the age group of 51-60 years followed by age group 71-80 years and least in age group 21-30 years and >80 years.CHB was most common in 61 to 70 years, first degree AV block was most common in 51 to 60 years , incomplete RBBB most common in 51 to 60 years and 71 to 80 years, LAFB was most common in 41 to 50 years, QRBBB was most common in 31-40 years , 51 to 60 years, and 61 to 70 years, RBBB was most common in 51 to 60 years, second degree type1 was most common in 41 to 50 years, 51 to 60 years and 71 to 80 years, second degree type 2 was seen only in 51 to 60 years. Most common risk factor among non survivors was HTN+ Dyslipidemia 70%, followed by HTN+ DM+ Dyslipidemia (69.23%) with significant p value. Non survivors with other risk factors like HTN, DM, dyslipidemia, alcohol alone and more than 2 risk factors did not find statistical significance. Maximum non-survivors (56.6%) seen in patients having TG>150mg% and LDL>100 mg% with no statistical significance.

Out of 140 patients, 3 patients (2.14%) did not have any comorbidities. All 140 patients were treated with STK in hospital and out of 140, 53 were non-survivors i.e. (37.8%). Multivariate analysis of variables showed that patients having CHB, first degree AV block, QRBBB and patients with killip's class4 have significant independent prediction for in hospital non-survivors (with significant p value). Average duration of hospital stays having different types of conduction blocks in survivors was 5.7 days (4.5-6.5 days) and in non-survivors was 2.4 days (1-3.5 days) with significant p value. These findings are correlated with the study done by Arunprasath D et al [10] and Charvda et al [11] and Lamas et al [12].

The highest non-survivors in QRBBB (41.51%) and lowest in LAFB (0.0%), Second Degree Type1 (0.0%) and second-degree type 2 (0.0%). Highest non-survivors in AWMI (52.83%) and lowest in PWMI (0.0%). CHB was most common in IWMI, first degree AV block was most common in IWMI, incomplete RBBB most common in ALWMI and AWMI, LAFB was most common in IWMI, QRBBB was most common in AWMI, RBBB was most common in IWMI and AWMI, second degree type1 was most common in IWMI and second degree type2 was seen only in IWMI. Similar findings are reported in previous studies [10, 13-15]. However, a study by Goldberg RJ et al showed that in hospital mortality is significantly higher with anterior wall infarction with CHB than with inferior wall myocardial infarction and that CHB is twice as common with inferior or posterior wall infarction as with anterior wall involvement [16].

Limitation of the study

All patients of STEMI with conduction blocks in our study were thrombolysed and none underwent Primary/Rescue PCI either due to technical difficulties or financial constraints. Hence, we could not determine mortality of patients with STEMI having conduction blocks undergoing Primary /Rescue PCI.

Conclusion:-

The most common conduction block observed was QRBBB followed by CHB with male preponderance and age being 51-60 years. Most common risk factor among non survivors was HTN+ Dyslipidemia. Multivariate analysis of variables showed that patients having CHB, first degree AV block, QRBBB and patients with killip's class4 have significant independent prediction for in hospital non-survivors (with significant p value). CB are associated with higher in-hospital mortality rate and are important predictors of poor outcome in patients with AMI (STEMI). Associated comorbidities increased the risk of conduction blocks in STEMI. All patients of STEMI were thrombolysed with STK. Primary /Rescue PCI may improve the outcome in patients of STEMI with conduction blocks in terms of mortality. But this assumption needs to be substantiated by conducting large scale randomized control trial (RCT) comparing thrombolysis vs.PCI to note the objective evidence of outcome in patients of STEMI with conduction blocks.

References:-

1. Vaduganathan M, Mensah GA, Turco JV, Fuster V, Roth GA. The Global Burden of Cardiovascular Diseases and Risk A Compass for Future Health. Journal of the American College of Cardiology 2022;80:2361- 2369.
2. Davies MJ, Redwood D, Harris A. Heart block and coronary artery disease. Br Med J. 1967; 3: 342-343.
3. Roos JC, Dunning AJ. Right bundle-branch block and left axis deviation in acute myocardial infarction. Br Heart J. 1970; 32: 847-851.

4. Altun A, Ozkan B, Gucajan A, Kadi H, Ozcelik F, Ozbay G. Early and late advanced atrioventricular block in acute inferior myocardial infarction. Coronary Artery Dis. 1998; 9: 1-4.
5. Rathore SS, Gersh BJ, Berger PB, et al. Acute myocardial infarction complicated by heart block in the elderly: prevalence and outcomes. Am Heart J. 2001; 141: 47-54.
6. Kramullah I, Iqbal MA ,Hadi A, et al. Conduction disturbances in patients with acute anterior wall infarctions and outcomes. Pak Heart J 2014; 47:156-161.
7. Uhley HN. Some controversy regarding peripheral distribution of the conduction system. Am J Cardiol 1972; 30:919-920.
8. Chandrashekar G, Pathi N. Conduction Blocks in Acute Myocardial Infarction: A Prospective Study. Int J Sci Stud 2016;4(6):1-6.
9. Mohit J Shah et al., A Study of 100 Cases of Arrhythmias in First Week of Acute Myocardial Infarction in Gujarat: A High Risk and Previously Undocumented Population Journal of Clinical and Diagnostic Research. 2014;8(1): 58-61.
10. Arunprasath D, C Ramakrishnan, E Dhandapani, NN Anand, A Clinical Study of Conduction Block in Acute Myocardial Infarction, J Res Med Dent Sci, 2021;9 (4): 406-410.
11. Chavda AB, Patel DS, Chatterjee SS. Clinical profile of conduction blocks in patients of acute myocardial infarction at tertiary care hospital, Jamnagar, Gujarat, India. IJSR 2012;1:102-3.
12. Lamas GA, Muller JE, Turi ZG, et al. A simplified method to predict occurrence of complete heart block during acute myocardial infarction. Am J Cardiol 1986; 57:1213.
13. Kramullah I, Iqbal MA, Hadi A, et al. Conduction disturbances in patients with acute anterior wall infarctions and outcomes. Pak Heart J 2014; 47:156- 161
14. Meine TJ, Al-Khatib SM, Alexander JH, et al. Incidence, predictors, and outcomes of high-degree atrioventricular block complicating acute myocardial infarction treated with thrombolytic therapy. Am Heart J 2005; 149:670.
15. Nguyen HL, Lessard D, Spencer FA, Yarzebski J, Zevallos JC, Gore JM, et al. Thirty-year trends (1975-2005) in the magnitude and hospital death rates associated with complete heart block in patients with acute myocardial infarction: A population-based perspective. Am Heart J 2008;156: 227-33.
16. Goldberg RJ, Zevallos JC, Yarzebski J, Alport JS, Gori 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.