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CONDUCTION BLOCKS IN MEDICALLY MANAGED PATIENTS WITH ACUTE ST ELEVATED MYOCARDIAL INFARCTION DURING INDEX HOSPITAL ADMISSION: AN OBSERVATIONAL STUDY.

General Medicine

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ABSTRACT

BACK GROUND: Conduction blocks (CB) are well-recognized complications of acute myocardial infarction; they are induced by either autonomic imbalance or ischemia and necrosis of the conduction system. It is important to recognize which conduction blocks are transient and which are likely to progress to irreversible and symptomatic high-degree block.
AIMS AND OBJECTIVES: 1. To analyze the incidence, frequency and type of Conduction blocks in relation to the Location / site of infarction in Consecutive cases admitted in ICU.
2. To correlate the Conduction blocks with immediate hospital outcome.
METHODS: 100 consecutive cases admitted in ICU of Alluri Sitarama Raju Academy of Medical Sciences with acute ST elevated myocardial infarction from August 2018 to February 2020 are selected for the study.
RESULTS: Anterior wall being most common 56% wall to be effected. 44% of patients presented with involvement of Inferior wall. First degree heart block was commonest of all (27.2%), followed next by CHB (23.1%). Bundle branch blocks accounted for 39.3% of all conduction abnormalities noted. 51.39% AVB occurred in Inferior wall AMI, while 69.39% of bundle branch blocks occurred in Anterior wall AMI. 27 patients died out of 100 in which 19 (70.3%) were males and 8(29.6%) were Females.
CONCLUSION: Incidence of MI is more in males (68%). Majority of the patients were in 40-80 yrs age group. Hypertension (39%) and Diabetis (35%) are the major risk factors. Anterior wall MI is most common (56%) followed by Inferior wall mi (44%). First degree heart block was commonest of all (27.2%), followed next by CHB (23.1%). Bundle branch blocks accounted for 39.3% of all conduction abnormalities noted. 51.39% AVB occurred in Inferior wall AMI, while 69.39% of bundle branch blocks occurred in Anterior wall AMI..

KEYWORDS

Acute Myocardial Infarction, Conduction Blocks , Incidence , Outcome.

INTRODUCTION:

Coronary heart disease affects Indians with greater frequency and at a younger age than in the developed countries, as well as many other developing countries. As a leading cause of morbidity and mortality, acute coronary syndrome is major public health problems. Electrocardiogram (ECG) is the most useful and feasible diagnostic tool for the initial evaluation, early risk stratification triage, and guidance of therapy in patients who have chest pain. Conduction blocks (CB) are well-recognized complications of AMI; they are induced by either autonomic imbalance or ischemia and necrosis of the conduction system. It is important to recognize which conduction blocks are transient and which are likely to progress to irreversible and symptomatic high-degree block.

AIMS AND OBJECTIVES:

1. To analyze the incidence, frequency and type of Conduction blocks in relation to the Location / site of infarction in Consecutive cases admitted in ICU.
2. To correlate the Conduction blocks with immediate hospital outcome.

MATERIALS AND METHODS:

Study area: The study was conducted in the department of General Medicine, Alluri Sitarama Raju Academy of Medical Sciences, A tertiary care center in Eluru , West Godavari Dist, Andhra Pradesh, India.

Study population: 100 consecutive cases admitted in ICU of ASRAM Hospital with acute ST elevated myocardial infarction from August 2018 to February 2020.
Study design: Observational study.

INCLUSION CRITERIA:

1. More than 18 years of age
2. Patients with documented Myocardial Infarction (MI) based on the following criteria:

Third Universal Definition of Myocardial Infarction[7].

EXCLUSION CRITERIA:

Patients < 18years of age
Patients with Congenital Heart Disease & conditions like Long QT Syndrome, Brugada, Arrhythmogenic right ventricular dysplasia etc.
Patients with valvular Heart disease
Patients with electrolyte imbalance
Patients on pro-arrhythmic medications which increase QT interval.

INVESTIGATIONS DONE:

12 lead-ECG
2D ECHO
Serum Electrolytes
Cardiac Markers
Cardiac Monitoring
Routine blood investigations.

RESULTS:

In the present study, we studied 100 patients of aged 18 years and above admitted in ICU of ASRAM Hospital, ELURU, from AUGUST 2018-FEBRUARY 2020 with Acute ST elevated myocardial infarction after satisfying the Inclusion and exclusion criteria.

1. We studied 100 patients of Acute Myocardial Infarction. 68(68%) of them were males.
2. Majority of patients (86%) fell in to age group 41-80 years. Youngest was 33 years. Oldest was 87 years.
3. Hypertension (39%) and DM-2(35%) of Cases.
4. Chest pain (93%) was the most common symptom overall followed by sweating 55%, dyspnoea was present in 40% of individuals, palpitation and anxiety seen in 38 % and 26% individuals respectively. Where syncope was least common symptom 13% of presentation.
5. Prior history of DM-2 35% and HTN 39% constitute s a major risk factor in incidence of MI with conduction blocks, Dyslipedemia was seen in 21% of patients .Known history of IHD been found in 16% of patients .History of use of tobacco is seen in 50% of individuals . 20% of patients had history of alcohol abuse.
6. Anterior wall (EXAW+AW+ AL+ AS) being most common 56% wall to be effected. 44% of patients presented with involvement of Inferior wall (IW+ IL+IP +IPL+IW+RV).
7. First degree heart block was commonest of all (27.2%), followed next by CHB (23.1%). Bundle branch blocks accounted for 39.3%

of all conduction abnormalities noted, however the association was statistically not significant.

8. 51.39% AVB occurred in Inferior wall AMI, while 69.39% of bundle branch blocks occurred in Anterior wall AMI, which was statistically significant (P=0.023)
9. 27 patients died out of 100 in which 19 (70.3%) were males and 8(29.6%) were females.
10. Maximum number of deaths 22 (80.7%) occurred within first 24 hours of presentation followed by 1(3.84%) and 4(15.3%) respectively on 2 and 3day.
11. CHB was associated with more number of sudden cardiac deaths. Atrio ventricular blocks associated with serious SCD than bundle branch blocks with statistically significant association with p value=0.0001.
12. Anterior wall MI associated with sudden cardiac Death and inferior wall MI association with more of stable patients with statistically significant association with p=0.025.

Table 1: Incidence Of Various Mi

MI SITE	No. of Cases	Percentage (%)
EXTENSIVE ANT.WALL	6	6
ANT. WALL	18	18
ANTERO SEPTAL WALL	15	15
ANTERO LATERAL WALL	17	17
INFERIOR WALL	26	26
INFERO LATERAL WALL	6	6
INFERIO POSTERIOR WALL	5	5
INFERIO POSTERIO LATERAL WALL	4	4
INF WALL + RV	3	3
TOTAL		100

Table 2: Incidence Of Various Types Of Conduction Blocks In Present Study.

TYPE OF CONDUCTION BLOCK		N0 (121)	PERCENTAGE (%)
ATRIOVENTRICULAR CONDUCTION BLOCK	FIRST DEGREE	33	27.2%
	SECOND DEGREE TYPE 1	3	2.4%
	SECOND DEGREE TYPE 2	8	6.6%
	THIRD DEGREE	28	23.1%
INTERVENTRICULAR CONDUCTION BLOCK/ DEFECT	RBBB	14	11.5%
	LBBB	11	9%
	RBBB+ LAHB	5	4.1%
	RBBB+ LPHB	1	0.8%
	LAHB	15	12.3%
	LPHB	2	1.6%

Table 3: Association Of Type Of Ami With Individual Conduction Blocks

	Total blocks	First degree	Second degree	Third degree	RBBB	LBBB	LAHB	LPHB	RBBB+ LAFB	RBBB+ LPHB
ANT. WALL	69(57%)	20	4	11	9	8	12	0	4	1
INF. WALL	52(43%)	14	7	16	5	3	4	1	1	0

DISCUSSION:

In a total of 100 patients of MI with conduction blocks studied, 68 were males and 32 were female. The ratio of male to female was 3:1. Maximum incidence 86% of MI was found in the age group 41-80 yrs. Prior history of DM-2 and HTN were present 35% and 39% of patients in our study. Previous history of IHD was seen in 16% in our study. We found almost equal incidence of mi involving AW & IW in our present study. Most of atrioventricular blocks (51.39%) were seen in inferior/posterior wall AMI while 69.39% of intraventricular blocks were associated with anterior/lateral wall AMI . First degree AV Block was the most commonest as well as the most common AV block noted in the present study accounting for 26% of the total conduction defects. Third Degree AV Block (CHB) was seen in 22.2%**.** RBBB was the most frequent type of intra-ventricular block. This was followed by LAHB which accounted for 11.9% of the total blocks. In our present study we found maximum incidence of various conduction blocks and death (80%) within first 24 hrs. Patients with complete heart block are found to be more affected with sudden cardiac death; similarly sudden cardiac death was found to be common in anterior wall MI than inferior wall MI which is more stable.

CONCLUSOIN:

1. Developing conduction block is an indirect measure of the severity and extension of the disease in patients with AMI.
2. Conduction blocks are associated with higher in hospital mortality rate and are important predictors of poor outcome in patients with AMI.
3. The higher prevalence of heart blocks in anterior wall or Q-wave infarctions indicates that the increased mortality following heart block development is probably not related solely to the conduction disturbance itself, but also to the relatively larger infracted area.
4. The most common block is being first degree heart block. AV blocks were more common in inferior wall MI and bundle branch blocks were more in AWMI. Mortality was increased in MI patients with conduction block than that of non-conduction block.
5. Both LBBB and RBBB prognosis strength are taking new positions over the time. With this review, we intend to warn physicians to keep their patients with MI, with BBB, under watch. Even the asymptomatic ones with coronary risk factors, should be carefully followed, once they are associated with increased mortality compared with those who do not have BBB.

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