

FREQUENCY OF HIGHER DEGREE AV BLOCKS IN PATIENTS ADMITTED TO CARDIOLOGY UNIT

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Objective: To know the frequency of higher degree AV blocks in patients admitted to cardiology unit PGMI, LRH Peshawar

Methodology: All patients admitted to cardiology unit PGMI, LRH Peshawar from first January 2012 to 31st december 2012 were included in the study. They were evaluated for higher degree AV blocks. Then there causes were studied. All of basic characteristics and causes was recorded on a pre designed Performa. Statistical analysis was done using SPSS version 19.

Results: A total of 6781 patients admitted during year 2012 were included in the study. Of all these patients 253(3.73%) were admitted with High degree AV blocks. 112(44.26%) were male and 141(55.74%) were females. Mean age was 63 ±13.73 years. 102(40.31%) were hypertensive. 125(49.40%)

were diabetics. The causes found were coronary artery disease in 75(29.64%), Rate limiting drugs in 25(9.8%), Acute or chronic renal failure were responsible for in 12(4.74%) While no cause was found in 140(55.33%) patients. 1 (0.3%) patients has hyperthyroidism.

Conclusions: We must maintain a high index of suspicion of high degree AV blocks in patients presenting with vertigo, dizziness, presyncope and syncope. In time management can improve survival.

Key words:

High Degree AV blocks, atropine, Temporary pacemakers, permanent pacemaker.

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INTRODUCTION

Every cardiac unit receives huge number of advanced degree heart blocks annually one of the study shows that the prevalence of third-degree AV block is 0.04%.¹ The advanced degree heart blocks are divided into two major groups i.e. the conduction dysfunction above the bundle of His and below the bundle of His. In complete 60% of patients have conduction dysfunction below the bundle of His. The presence of a narrow QRS complex suggests the site of the delay is more likely to be in the AVN; however, a wide QRS complex may be observed with either AVN or infranodal conduction delay.² While abnormality involving the AV node is 21% or the His bundle is 14%-18%.³ Cardio-active drugs are an important cause of Higher degree AV block.⁴ Adenosine infusion for nuclear stress testing may cause permanent AV block.⁵ Benzathine penicillin has

been associated with second-degree AV block.⁶ Other important causes are Inflammatory diseases, Lyme disease, Rheumatic fever,⁷ Infiltrative diseases - Amyloidosis, hemochromatosis, sarcoidosis,⁸ lymphomas, and multiple myeloma.⁹ Electrolyte abnormalities i.e Hyperkalemia, hypermagnesemia may cause different degrees of AV blocks. Addison disease, Thyroid diseases, thyrotoxic periodic paralysis,¹⁰ Ankylosing spondylitis, dermatomyositis, rheumatoid arthritis, scleroderma, lupus erythematosus, Reiter syndrome, mixed connective tissue disease,¹¹ Myocardial bridging,¹² Transcatheter closure of atrial and ventricular septal defects^{13,14} Obstructive sleep apnea.¹⁵ Degenerative changes in the AVN or bundle branches eg, fibrosis, calcification, or infiltration are the most common cause of nonischemic AV block. Myocardial ischemia is also associated with AV blocks. It is frequent With inferior wall MI Than other territory involvement.

The diabetes is associated with increased prevalence of cardiac conduction abnormalities.¹⁶⁻¹⁹ It may be because of increased autonomic neuropathy. The low heart rate observed in third-degree or Mobitz II second-degree AV block may lead to syncopal episodes with major injuries (eg, head trauma, hip fracture), exacerbation of congestive heart failure, or exacerbation of ischemic heart disease symptoms due to low cardiac output. Third-degree AV block is associated with profound bradycardia unless the site of the block is located in the proximal portion of the AVN. Exacerbation of ischemic heart disease or heart failure symptoms caused by AV block-related bradycardia and reduced cardiac output may lead to specific clinically recognizable symptoms (eg, chest pain, dyspnea, confusion, and pulmonary edema). Laboratory investigations are not usually indicated in patients with atrioventricular (AV) block. Electrolytes and drugs (eg, digitalis) can be checked in the AV block when suspicion of electrolyte abnormality or drug toxicity exists. In cases when second-degree and third-degree AV block might be a manifestation of

acute myocardial infarction, cardiac enzymes should be measured. If clinical evaluation suggests systemic illness, appropriate directed laboratory studies for infection, myxedema, or connective tissue disease should be performed.

Routine electrocardiographic (ECG) recording and cardiac monitoring with careful evaluation of the relationship between P waves and QRS complexes are the standard tests leading to proper diagnosis of AV blocks. Long-term medical therapy is not indicated in atrioventricular (AV) block. Permanent pacing is the therapy of choice in advanced AV block, and it does not require concomitant medical therapy. AV nodal blocking medications contributing to heart block should be discontinued if not necessary. Complications include Sudden death due to asystole or ventricular tachyarrhythmias, Cardiovascular collapse with syncope, aggravation of ischemic heart disease, congestive heart failure and musculoskeletal injuries during syncopal episodes.

Temporary transcutaneous or transvenous pacing is the treatment of choice for an emergency involving a slow heart rate (and for asystole) caused by AV blocks. Transfer to a specialized medical center may be advisable. Atropine administration (0.5-1.0 mg) may improve AV conduction in emergencies where bradycardia is caused by a proximal AV block (located in the atrioventricular node [AVN]) but may worsen conduction if the block is in the His-Purkinje system. In general, the decision regarding implantation of a permanent pacemaker must be considered with respect to whether or not AV block is permanent. Reversible causes of AV block, such as electrolyte abnormalities, if present, should be corrected first. Conversely, some conditions may warrant pacemaker implantation owing to the possibility of disease progression even if the AV block reverses transiently (eg, sarcoidosis, amyloidosis, neuromuscular diseases). Finally, permanent pacing for AV block after valve surgery follows a variable natural history, and, therefore the decision for permanent pacing is at the

physician's discretion.

The aim of this study was to know the frequency of advanced second degree and 3rd degree AV block (CHB) in patients admitted in Cardiology department PGMI, LRH Peshawar.

METHODOLOGY

All patients admitted to cardiology unit PGMI, LRH Peshawar from first January 2012 to 31st december 2012 were included in the study and frequency of patient with advanced 2nd degree or third degree AV bock was exmined and there causes were evaluated to be ischaemic or non ischaemic. 12 lead ECG was used as adiagnostic tool for High degree AV block in this study. The sampling technique was non-probability consecutive. The patients excluded were of first degree or mobitz type 2 2nd degree, sinus bradycardia, junctinal bradycardia. All the data was collected on specially designed Performa and entered to computer. Advanced second degree AV block was defined as, in which two or more consecutive P waves are non conducted while Third-degree AV block (also called complete heart block) was defined when more P waves than the QRS complexes were present and no relationship existed between them (no conduction). If the patient was taking any drugs that might cause high degree AV block ,it was immediately stopped. Data was entered and analyzed using SPSS version 19. Frequencies and percentages were calculated for all qualitative variables while Mean, standard deviation was calculated for quantitative variables. Chi-square test will be applied to check association between qualitative variables.

RESULTS

A total of 6781 patients admitted during year 2012 were included in the study. Of all these patients 253(3.73%) were admitted with High degree AV blocks. 112(44.26%) were male and 141(55.74%) were females. Mean age was 63 ±13.73 years. 102(40.31%) were hypertensive.

125(49.40%) were diabetics. The causes found were coronary artery disease in 75(29.64%), Rate limiting drugs in 25(9.8%), Acute or chronic renal failure were responsible for in 12(4.74%) While no cause was found in 140(55.33%) patients. 1 (0.3%) patients has hperthriodism.

TABLE 1: BASELINE CHARACTERISTICS

Variables	N (%)
Gender	
Male	55(43.3)
Female	72(56.7)
Mean age(±SD)	63(±13.73)
hypertension	102(40.31%)
diabetes	125(49.40%)
idiopathic	140(55.33%)
Coronary artery disease	75(29.64%)
drugs	25(9.8%)
Renal failure	12(4.74%)
hperthyriodism	1(0.3%)

DISCUSSION

As evident from our study high degree AV blocks are more frequently found in cardiac care units. In our hospital about 4% of admission in cardiology units is related to High degree AV blocks. In patients we have studied with High degree AV blocks were 112(44.26%) males as compare to 141(55.74%) females. Mean age found was 63 ±13.73 years. Majority of patients 125(49.40%) were diabetics. Most of the patients in our study were having age more than 50 years. Almost all of the studies shows that most of the patients with high degree AV blocks are elderly. Moya A et al. founded in their study that approximately (68.1%) required pacemaker at presentation with syncope. Congenital third-degree AV block is rare, at 1 case per 20,000 births. In our study we have not found any person with congenital complete heart block.²⁰ 43(33.9%) of patients in our study have coronary artery disease,

which was more common in inferior wall myocardial infarction i.e. 32(25.2%), these findings are in accordance with international data.^{21,22} Movahed MR et al. found in their study that Third-degree AV block diagnosis was present 1.1% of the diabetic patients vs 0.6% in the control group. Similarly in our study about half of patients were diabetics, so supporting our data.²³ The prevalence of patients with DM is more in patients who need permanent pacemaker treatment, suggesting the susceptibility of these patients to significant bradyarrhythmias.²⁴ Bundle-branch blocks in patients with DM could progress to higher-degree AV block, explaining our finding, but the evidence for this concept is lacking. However, there are many reports about the increased prevalence of high-degree AV blocks in patients with DM. Third-degree and high-degree AV blocks have been reported in DM cases during metabolic derangement and with postprandial stress.²⁵ Furthermore, the prevalence of DM with high-degree AV block has been found to be higher in patients requiring pacemaker treatment,²⁶ and in patients with chronic heart block,²⁷ consistent with our finding. An autopsy report²⁸ in a small number of patients with DM and chronic heart block have shown changes in the conduction system typical for DM, such as diabetes microangiopathy. Degenerative changes in the AVN or bundle branches (eg, fibrosis, calcification, or infiltration) are the most common cause of nonischemic AV block.²⁹ In 140(55.33%) patients no cause was found to be responsible for higher degree AV blocks, so they were attributed to age related degeneration, so supporting our study.

CONCLUSION

Idiopathic High degree AV blocks are more frequent in patients admitted to cardiology units followed by coronary artery disease.

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