CARDIAC ARRHYTHMIAS AND CONDUCTION DISTURBANCES PRESENTING TO A TERTIARY CARE CENTER

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Abstract

Objectives: *To determine the prevalence of cardiac arrhythmias and conduction disturbances presenting to the emergency room at a tertiary care hospital.*

Materials & Methods: *We investigated cardiac arrhythmias and conduction disturbances in 1096 patients presenting to emergency room Department of Cardiology Hayatabad Medical Complex from June 2017 to February 2018 with speciic cardiac conditions including supraventricular and ventricular arrhythmias, second-degree or higher atrioventricular (AV) block, intraventricular block, and sick sinus syndrome. The sampling technique was consecutive randomized. The data were analyzed using SPSS version 23.*

Results: *Out of total1096 patients, who presented to the emergency room 194(17.7%) were atrial ibrillation. Atrial lutter was present in 156 (14.2%). Narrow-QRS tachycardia was recorded in 380 (34%), and 98(8.9%) comprised ventricular arrhythmias. Bradyarrhythmias including AV block or sinus dysfunction was present in 268 (24.4%).*

Conclusion: *A significant number of patients seen in a cardiology emergency room who were seen for the first time presented with cardiac arrhythmia or conduction disturbance, and most of the patients were treated with radio frequency ablation. This implies that radio frequency ablation is an important modality of treatment in interventional cardiology.*

Key Words: *Arrhythmia, Heart block, Electrophysiology*

Introduction

Arrhythmias and conduction disturbances are one of the most leading problems of cardiology emergencies. They may present clinically as palpitations or syncope or as sudden cardiac death causing morbidities or mortality. Thus the spectrum of the disease needs to be studied. The study of the substrate that triggers and maintains these arrhythmias have been studied[1]. Moreover understanding the mechanism of these arrhythmias have improved the therapeutic approaches including radiofrequency ablations and implantable devices. Electrocardiogram (ECG) or ambulatory 24 hours ECG may increase the diagnostic yield of these arrythmias[2-4].

In recent years, the results of some studies have been published that allow thinking about the adverse effects of both supraventricular and ventricular extrasystoles of the course of certain cardiovascular diseases. Very heterogeneous results of the performed studies, as well as data about the high clinical significance of individual cardiac arrhythmias , make further epidemiological studies in this field extremely urgent. However, except atrial fibrillation (AF), on which multiple studies were conducted and had determined the true prevalence[1-4]. There has been no studies to determine the prevalence of the rest of the arrhythmias. Due to the lack of information, the real importance of the problem and the demands of the management of these diseases continues to be little known to the health care providers and the

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health department. Thus, devising proper allocation of resources, both human and material and also training programmes for specialists in the field of electrophysiology.

The objective of our study was to determine the prevalence of cardiac arrhythmias and conduction disturbances in a general cardiology clinic. Thus this study will determine the frequency of our patients who require referral to units specialized in the management of arrhythmias. They will benefit from an electro physiological study (EPS) and device implantation which is the deinitive treatment for these arrhythmias.

Materials and Methods

This study was conducted at the Department of Cardiology Hayatabad Medical Complex Peshawar from June 2017 to June 2018. We analyzed the rhythm or conduction disturbances in 3569 patients who presented to the cardiology emergency room with various symptoms like chest pain, dyspnea, or presyncope, syncope. If a patient came to our centre more than once during the period of data collection (June 2017 to February 2018), the only the first visit was considered.

A patient was considered to present an arrhythmia when the Emergency room(ER) electrocardiographic recording that was provided by the patient or the cardiac monitor recording revealed any of the following rhythm disturbances: atrial ibrillation, atrial lutter, regular narrow QRS tachycardia with no evidence of atrial lutter, and sustained or non - sustained ventricular tachycardia.

Ventricular tachycardia was considered to be any regular tachycardia with a wide QRS complex, or one that differed from that of baseline rhythm and sustained tachycardia was that which lasted more than 30 seconds or required termination using some type of therapeutic technique. Those patients with supraventricular or ventricular premature beats, regardless of their frequency, were excluded and those presenting frequent, highly symptomatic ventricular premature beats and requiring drug treatment were included only exceptionally.

Atrial fibrillation was classified according to the clinical patterns established in the joint document of the American Heart Association, the American College of Cardiology and the European Society of Cardiology[5] .The presence of second-degree or higher grade atrioventricular (AV) block, or bifascicular block, was considered a conduction disturbance. Patients with sick sinus syndrome were also included.

The study was conducted after approval from the institutional ethical committee. Mean, and the standard deviation was used for numerical variables. The data were analyzed using SPSS software version 23.0.

Results

Out of 3569 patients analyzed, 1096 patients had diferent arrhythmias patterns. The mean age was 55±11, mostly female 73.1%. Hypertension was the predominant risk factor for coronary artery disease. Coronary artery disease was present in 2.2% of patients who presented with arrhythmias. Table:1

The most frequent arrhythmia recorded was supraventricular. (Figure 1).

Among patients with atrial ibrillation, those with underlying structural heart disease had permanent AF with 43.5% qualifying for anticoagulation. Patients with paroxysmal atrial ibrillation were relatively young and without structural heart disease Table:2.

Among patients who presented with ventricular tachycardia, 66% had impaired left ventricular systolic functions with ischemia being the cause in 40 %. Ventricular tachycardia in the absence of structural heart disease(idiopathic left ventricular including outlow tract ventricular tachycardia) was present in 33%.Table:3

Discussion

Rhythm and conduction abnormalities are frequently diagnosed in outdoor and emergency departments and walk-in clinics. Our study showed that rhythm disturbances comprise is a major component of the cardiovascular morbidities and mortalities.

Atrial ibrillation was found in 17.8% of the patients, and most of the patients with paroxysmal AF had structurally normal hearts. This suggested that atrial ibrillation is an arrhythmia of the current era and would need special attention with regards to cryoablation which is the current standard treatment for AF ablation[13]. The percentage of patients with valvular heart disease mainly rheumatic was higher in our study(8%), and 1 in every 5 of those had per-

manent or persistent atrial ibrillation. Other studies have shown the percentage of patients with valvular disease ranges between4% and 19%[1-14]. In the recent survey of the European Society of Cardiology(only 10% of the patients had the valvular disease. This is because rheumatic fever and thus the consequent rheumatic heart disease is very much prevalent in our part of the world.

This shows that the pattern of distribution of clinical arrhythmias depends on the health care settings in which these arrhythmias are analyzed. Anticoagulant therapy was widely employed among our patients and, although the results differ to some extent from those of other groups,[16, 17] we consider that, in general, they are representative of the current trends in Pakistan. And the contrast with the situation of a decade ago even in developed countries. [18,19] However, we consider that the difference observed between the paroxysmal and the persistent patterns are not explained by this fact and that the permanent or persistent presence of arrhythmia continues to be determinant for the prescription of drug treatment, despite the fact that the information currently available recommends that it be the thromboembolic risk factors, rather than the clinical presentation of the arrhythmia, that influence the form of treatment [20-22]. Thus patient may benefit from the currently available cryoablation in our laboratory.

The prevalence of atrial lutter is almost the same as AF in our study. The mean patient age was greater than that of the patients with AF, and AF had been documented in 2 of every 3 of the subjects in this group, thus confirming previous reports of the frequent association between these two arrhythmias.[23-25] The difference between what we have referred to as a possible indication for EPS and the real indication or performance of the study should not, in our opinion, be attributed to ignorance of the clinical practice guidelines or their improper application. These documents include, as class I recommendations, radiofrequency ablation in patients with brief and sporadic episodes and even certain isolated episodes of narrow IRS tachycardia[6]. Although the procedure can now be performed in our setting with a high probability of success and low rate of complications[26], its purpose is not to prevent fatal or disabling complications, which are exceptional in this group of diseases but to provide an effective treatment aimed at improving quality life. Thus, in situations in which the patient considers that the disease does not keep him or her from performing normal daily activities, other therapeutic options may be valid.

In our study, 50% of all the patients with this type of arrhythmia underwent steps. However, radio-frequency ablation was recommended in only 28% of those being seen for the first time. A different approach should be employed to justify the fact that only 36% of the patients with ventricular arrhythmias and indication for EPS and an EF less than 30% of ischemic origin [26] and 63% of those presenting syncope in the presence of advanced intraventricular block[10,11] were referred for EPS and device implantation. In the first case, the recent inclusion of this indication[7,8], together with the advantage of a significant proportion of the patients, may have influenced our decision. These data are based on currently accepted indications and do not include indications that are presently a subject of debate, such as those related to biventricular stimulation[25,26], or those that have yet to be fully established and developed in our setting (substrate ablation in AF), the introduction of which will require a radical change in the situation. Given that our study was based on the presence of documented arrhythmias, we have not included the indications for EPS in the absence of electrical or structural changes, despite the presence of highly specific clinical conditions(family history of sudden death, hereditary heart diseases, etc.), in which the symptoms (palpitations, dizziness, etc.) could influence this indication; we consider, however, that the importance of the latter situations, from a quantitative standpoint, is limited.

Conclusion

This study shows that the burden of arrhythmias is quite high in our population and judicious management and referral of patients in primary and tertiary care centres to electrophysiologists will help cure most of the arrhythmias. This will decrease the burden of the disease and reduce the, in turn, decrease the injudicious use of antiarrhythmic medications.

This data may serve as a support for planning the allocation of human and material resources, as well as for establishing indicators for health care quality, designing continuing education activities or devising training programs for new specialists.

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