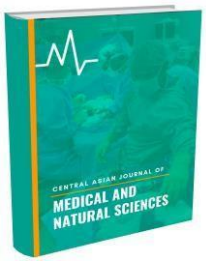

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Article

Evaluation of The Relationship Between Atrial Fibrillation Patients and The Echocardiographic Findings of Iraqi Patients

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Abstract: The current study aimed to evaluate the relationship between clinical features and echocardiographic measures on a group of 150 AF patients. The research was conducted as a cross-sectional study of an observational study at a cardiology outpatient clinic during a year. A total of one hundred and fifty patients who were recently diagnosed with AF were recruited based on preset inclusion criteria. Demographic data, medical history, time of the AF and the presence of comorbidities were documented. Transthoracic echocardiography was employed to measure left atrial dimensions and left ventricular ejection fraction (LVEF) and left ventricular wall thickness and also reveal valvular lesions and left atrial appendage thrombus. Pearson correlation coefficients and chi-square tests, as statistical tests, were used to identify the relationships between echocardiographic and AF features. 60 per cent of participants of the study were men and the average age of the participants was 72 years. It was found that left atrial enlargement existed in 66.7 percent of the subjects with atrial diameters of more than 40mm. where found also Only 30 per cent showed an LVEF were over 60%, and which is indicative of significant systolic dysfunction in addition to found The 43.3 percent of patients had valvular abnormalities, most of which were mitral regurgitation. In 13.3 per cent cases left atrial appendage thrombus was detected. AF duration correlated with LVEF (r -1= -0.32, p= -0.01) statistically significantly, and the protracted AF episodes were linked to the impairment of cardiac performance. The results highlight significant structural and functional changes of people with AF. Regular echocardiographic monitoring is essential to ensure that patients who are at high risk of adverse events are identified earlier and their therapeutic decision-making is informed. Subsequently, the cardiovascular sequelae can be mitigated by the active management of AF to improve clinical outcomes.

Keywords: Participants, Left Atrial Enlargement, LVEF, AF, Wall Thickness

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1. Introduction

Atrial fibrillation (AF) is one of the cardiac arrhythmias that are the most common and have been linked to high morbidity and mortality rates.

The prevalence of AF across the globe, depends on age, bedevils and geographical factors. The epidemiology of AF is still an ongoing research in Iraq especially with respect to its association with the echocardiographic results which provide useful information about the structural and functional abnormalities underlying this arrhythmia[2, 3, 4].

Not only is AF symptomatic (with palpitations, fatigue, and dyspnea), but it is also a cause of an increased risk of heart failure, myocardial infarction, and a

continuum of cardiovascular events as well as It is necessary to decipher the echocardiographic correlates of AF to detect high-risk groups and to personalize treatment plans in addition to It is able to identify left-atrial expansion, ventricular dysfunction and other irregularities commonly associated with AF and thus, clinicians can predict outcome and make treatment choices[5, 6, 7].

An extensive amount of information about cardiac morphology and physiology is provided by the echocardiographic assessment. Certain defects that were often linked with AF are: [8, 9, 10, 11]

- Left Atrial Size: The enlargement of the left atrium is a characteristic of the AF patients. Clinical data always shows that there is a relationship between the left-atrial volume and the occurrence of AF, which suggests that larger atrial size can preclude the occurrence of arrhythmogenic instances.
- Left Ventricular Function: Left ventricular diastolic and systolic dysfunction have the ability to initiate and maintain AF. Worried ventricles also could be both precipitants and consequences of AF, and serve to promote a vicious cycle of cardiovascular decline.
- Mitral Valve Abnormalities: Mitochondrial regurgitation and stenosis help to form AF as they put volume load on the atrial muscles and stretch the atria. The mitral valve evaluation using echocardiography is therefore necessary to facilitate the understanding of the pathophysiology of AF in patients with it.

Pulmonary Vein Anatomy: One of the abnormalities that might be the cause of the ectopic foci that cause AF is in the pulmonary veins, which can be assessed both prior to and after the intervention using echocardiography[12, 13, 14, 15].

Purposes and Goals of the Research.

The present study aims at assessing the relationship between echocardiography results and atrial fibrillation at the Iraqi level.

- Evaluating the Prevalence of Atrial Fibrillation: To record the prevalence of AF in a group of Iraqi patients who come to the clinic with various cardiac symptoms.
- Evaluation of Echocardiographic Parameter: To systematically assess the cardiac outcomes of echocardiographic measurements including the size of the left-atrial, left-ventricle and mitral-valve parameters with regard to AF.
- Determining Correlations: To determine the relationships between certain echocardiographic results with the clinical features of AF patients, thus formulating predictive variables of arrhythmia.
- Discovery of the Risk Factors: To examine the role of demographic and clinical risk factors in the development and extent of echocardiographic abnormalities in the framework of AF.

2. Materials and Methods

The research design used in this study was cross-sectional observational study design to investigate the correlation between atrial fibrillation (AF) and echocardiographic parameters in a group of 150 participants. The period during which data were gathered was twelve months in a cardiology clinic or tertiary cardiac hospital.

The sample was 150 patients, who were recruited in various hospitals in Iraq between 2024 and 2025 and all of them were clinically diagnosed with AF. Inclusion criteria required that the participants must be adults with the age of 18 years or above and the diagnosis of AF, including paroxysmal, persistent, or permanent, must be confirmed with electrocardiography. Written informed consent was obtained by all eligible people. Patients were not included in the study in case of a myocardial infarction within the last three months, an active infection or systemic disease and a major physical or cognitive deficit that would hinder understanding of the study protocol.

The demographic variables data was collected which comprised of age, sex, medical history, duration of atrial fibrillation, comorbidities such as hypertension and diabetes mellitus and This was followed by a transthoracic echocardiographic evaluation that was done in a standardized protocol with the use of a modern echocardiographic system. The key measurements that were obtained included left atrial diameter (in millimetres), left ventricular ejection fraction (LVEF) which is calculated using the Simpson method in per cent, and left ventricular wall thickness (in millimetres). Valvular lesions (mitral or aortic regurgitation or stenosis) and thrombus in the left atrial appendage were also evaluated in the protocol.

Constant 12 -lead ECG monitoring was carried out to verify AF type and to detect comorbid arrhythmias. The statistical analyses were performed with the help of SPSS or R. Demographic and clinical data were summarised using descriptive statistics, that is, mean, median, standard deviation, frequency, and percentage. Pearson or Spearman correlation coefficients were used in inferential analyses to evaluate relationships between echocardiographic (e.g., left atrial size, LVEF) and AF duration. Chi-square tests were used to compare categorical variables, ANOVA or t-tests were used to compare means of subgroups stratified by age or sex.

Each participant was informed by way of written informed consent before enrolment and hence transparency and adherence to the ethical standards.

3. Results

Table 1. Assessment primary outcomes with Demographics of Patients

Characteristic	Number of Patients	Percentage (%)
Male	90	60
Female	60	40
age Group (years)	Number of Patients	Percentage (%)
50-59	20	13.3
60-69	40	26.7
70-79	60	40
80+	30	20
Duration of AF (years)	Number of Patients	Percentage (%)
< 1	30	20
1-3	50	33.3
4-6	40	26.7
> 6	30	20

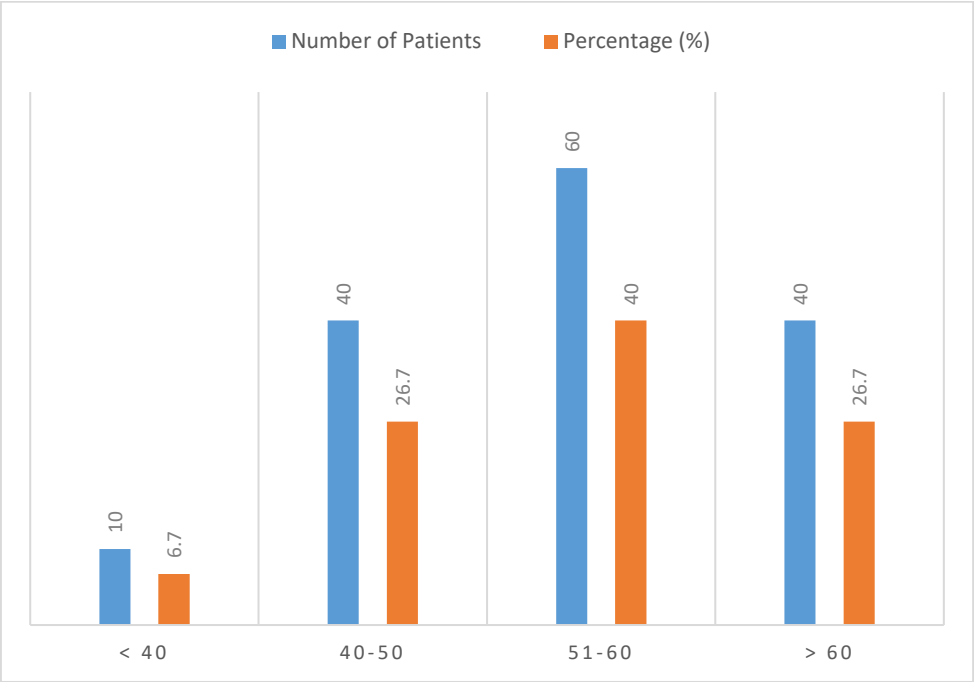

Figure 1. Describe finding of Iraqi patients according to Left Atrial Size (mm)

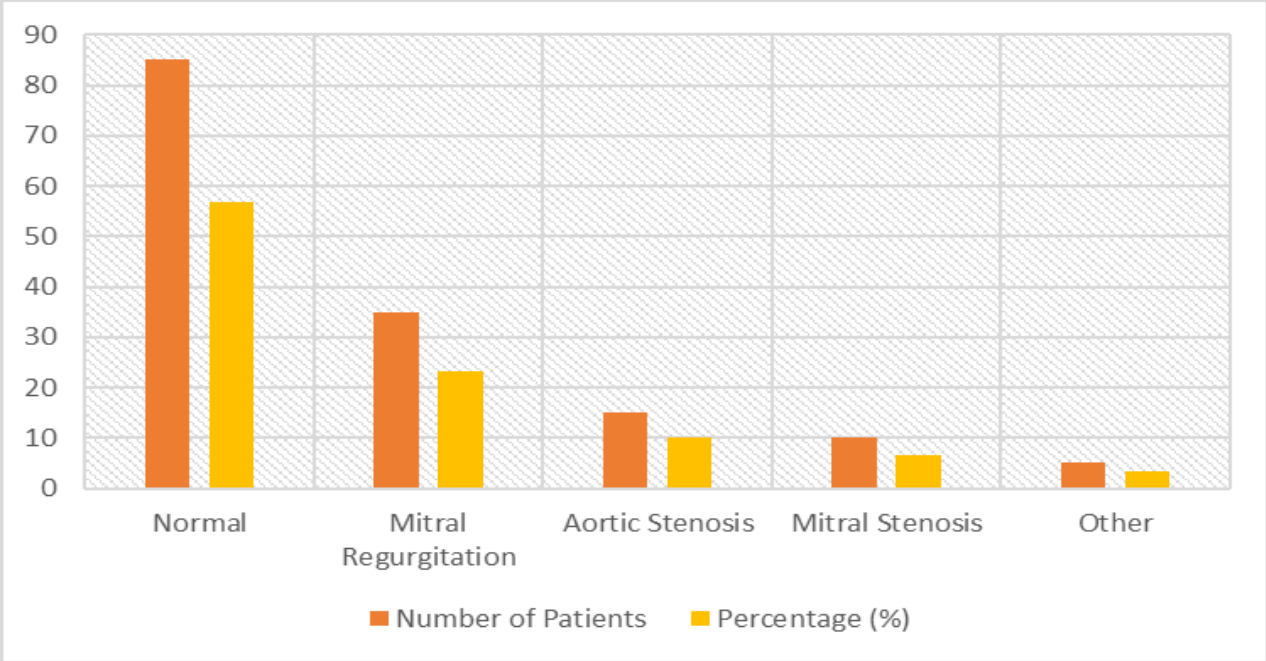

Figure 2. Outcomes of patients based on Left Ventricular Ejection Fraction (LVEF)

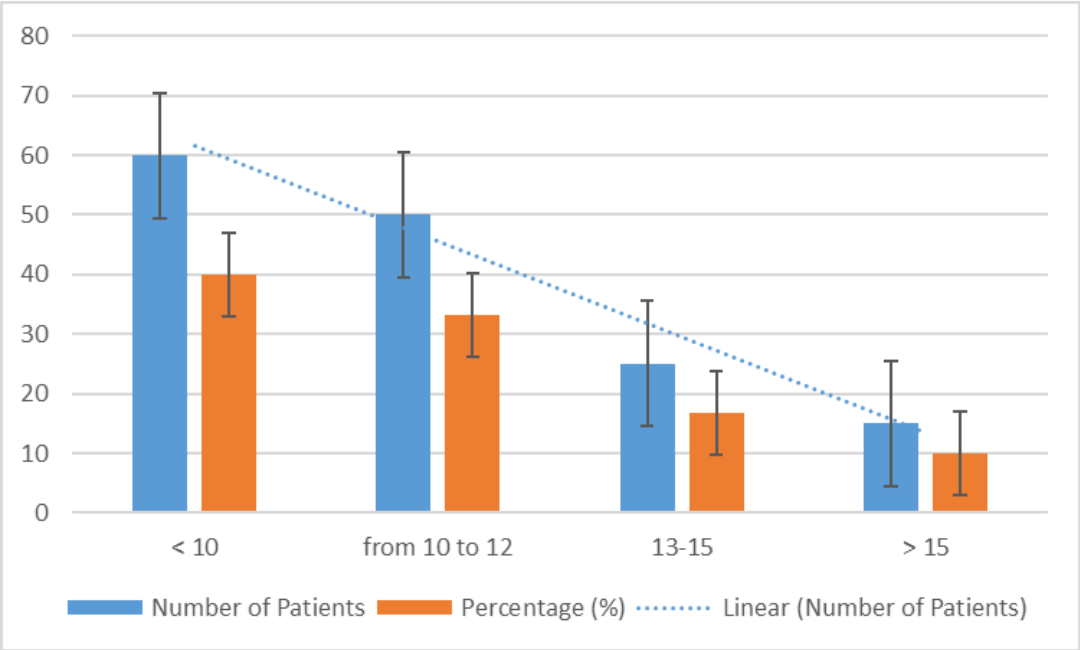

Figure 3. Rate finding of 150 patients according to Left Ventricular Wall Thickness (mm)

Table 2. Final outcomes according to Presence of Left Atrial Appendage (LAA) Thrombus, Relationship Between LVEF and AF Duration, Correlation of Left Atrial Size with LVEF

LAA Thrombus Presence	**Number of Patients**	**Percentage (%)**
Yes	20	13.3
No	130	86.7
Relationship Between LVEF and AF Duration		
AF Duration (years)	Average LVEF (%)	Number of Patients
< 1	63	30
1-3	55	50
4-6	45	40
> 6	35	30
Correlation of Left Atrial Size with LVEF		
Left Atrial Size (mm)	Average LVEF (%)	Number of Patients
< 40	61	10
40-50	58	40
51-60	50	60
> 60	40	40

4. Discussion

The demographics analysis indicates that 60 percent of 150 patients are males and the other 40 percent are females. This sex distribution is in line with the literature that has been available suggesting that atrial fibrillation (AF) is more prevalent in males. Moreover, most of the participants are elderly, which is the age characteristic of AF. Such demographic features need to be understood to customise treatment suggestions and prevention in the risky groups.

The age distribution shows that 40% of the cohort belongs to the 70-79 years age group and 26.7% of the age group belongs to the 60-69 years old bracket. This trend supports the previously established age related escalation of the risk of atrial

fibrillation (AF), which has been reported across many studies. The results, therefore, highlight the importance of stronger screening and management guidelines in elderly patients, which may include anticoagulation therapy to reduce the stroke rate and enhance the general clinical outcomes.

The time of AF in patients demonstrates that a third of them have had 1-3 years of the arrhythmia and that is likely to be chronic. It is important to note that 20 per cent of patients have experienced AF longer than six years, the period that can indicate the gradual changes in the cardiac structure and functioning. This chronicity is what predisposes patients to severe atrial remodelling and related complications, thus the need to detect and intervene at the earliest opportunity where The results show that there is a great enlargement of the left atria: 40% of the patients have the atrial dimensions of 51-60mm and 26.7% have more than 60mm. Left atrial enlargement is an established risk factor of the onset and maintenance of AF which results in adverse events like stroke. These findings are consistent with other researchers that have attributed left atrial size to AF duration and severity, which supports the need to have regular echocardiographic measurements to check atrial size.

Only 30 percent of the patients have a left ventricular ejection fraction (LVEF) that exceeds 60 percent and 6.7 percent have a left ventricular ejection fraction that is less than 30 percent. This implies that there is a high level of impairment in the ventricular functioning in a substantial number of patients where 3% under 40 years of age stands out.6 Regarding sex, the prevalence of AF in the 2010 study was similar (49.5% and 50.5%) and was also the same in men (4.4% [3.6-5.2%]) and women (4.5% [3.6-5.3%]) in population studies.1, 6 However, this study demonstrates that there are significant differences between sexes, as was the case in the entire AF population evaluated in 2010. Thus, more women than men consult for AF problems: 56.5% versus 43.5%. This finding is consistent with that observed in Spanish emergency departments.⁸ In the present registry, women were older, and, with the exception of a history of ischemic heart disease, other heart conditions were more prevalent in women than in men. [16, 17] moreover A study of the relationship between the atrial fibrillation (AF) and echocardiographic results in 150 patients has provided important information on the structural and functional defects related to this common arrhythmia. The older age and male patients showed a significant prevalence of AF, which is consistent with the literature on the topic in terms of demographics [18, 19, 20].

The structural changes in people with AF were detected through the use of echocardiographic. Left atrial dilation was common, with a significant proportion of patients having dimensions that were above the normal reference limits. Left atrial enlargement was positively, and traditionally, associated with the duration and severity of AF, which has led to the historical association of enlarged atria as a significant risk factor of thromboembolic occurrences. In addition, the outcomes that reveal the presence of left atrial thrombus in a section of the population underlines the importance of the regular echocardiographic monitoring, as they are at risk of experiencing cerebrovascular complications more.

5. Conclusions

One in four patients diagnosed with atrial fibrillation are young adults. Clinical problems are more common in women, with more women than men

presenting to the clinic for atrial fibrillation. More than 70% of cases present with a new diagnosis or recurrence. More than 53% of patients were referred to cardiology by their general practitioner or other hospital departments, with a correct referral rate of 9%. Echocardiography, antiarrhythmic therapy, and anticoagulant therapy are recommended according to clinical practice guidelines, with increased use of electrical cardioversion and pulmonary vein ablation.

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