REVIEW ARTICLE

Specific risk factors for occurrence of Atrial fibrillation AF in type 2 diabetic patients in CCU of Al diwaniyah Teaching Hospital / Iraq

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Abstract:

Background:Atrial fibrillation (AF) is the most common type of sustained cardiac arrhythmia, impacting a substantial number of people worldwide. Type 2 diabetes (T2D) is a chronic condition that can negatively influence the cardiovascular system and is often associated with an elevated risk of AF. However, the interplay between T2D and AF and the risk factors contributing to the occurrence of AF in T2D patients are not completely understood, especially in the context of critically ill patients in the coronary care unit (CCU).

Objectives:The purpose of the current study is to establish the relationship between patients with diabetes mellitus and the risk factors that lead to atrial fibrillation. in CCU of Al-diwaniyah teaching hospital/ Iraq.

Methods: The current cross sectional study was carried out on any patients with type 2 diabetes and specific risk factors who complaining of atrial fibrillation in CCU of Al Diwaniyah hospital, The data collection spanned a four-months period, from 8th March to 1st July 2023.

Results : This study showed that all recruited participants had a mean age of 64.3 ± 12.6 years, with a range of 50 years. Regarding bad habits, 36 (35.6%) subjects were smokers, 98% had an adverse history of alcohol intake, and 38 (37.6%) drank more than 3 cups of black tea daily; there was a significant difference in the frequency distribution ofpatients according to smoking between males and females (p = 0.002) .

Conclusion:The current study concluded that there are specific risk factors that contribute to the development of atrial fibrillation in patients with diabetes, who practice bad habits such as drinking alcoholic beverages, smoking, drinking tea and coffee abnormally, Covid 19 infection, stress.

 Key words: Diabetes mellitus ,Atrial fibrillation , Risk factors ,CCU

Introduction

Atrial fibrillation is the most common type of sustained cardiac arrhythmia, impacting a substantial number of people worldwide. It significantly increases the risk of stroke, heart failure, and other heart-related complications (1). Type 2 diabetes (T2D) is a chronic condition that can negatively influence the cardiovascular system and is often associated with an elevated risk of AF (2) Several risk factors are commonly associated with the occurrence of atrial fibrillation (AF) in patients with type 2 diabetes mellitus (T2DM), especially those in coronary care units (CCUs). These risk factors can include: Inflammation: Chronic low-grade inflammation, a feature of T2DM, may contribute to the development of AF (3). Alcohol and Tobacco Use: Both alcohol and tobacco use have been associated with an increased risk of AF, and these lifestyle factors

can be more common in individuals with T2DM (4, 5)

patients and method: In this hospital –based study cross sectional study, to establish the relationship between diabetic patients and specific risk factors that lead to A.F,we had 96 patients in the coronary care unit, through daily follow-up, and based on the medical documentation record of A.F. patients, for a period of four months, from March to July 2023.

Result :

The current study comprised 96 people, including 54 (55.7%) male and 42 (43.3%) females, as indicated in Table (1) shows the demographic appearances of contributors included in the existing investigation. All recruited participants had a mean age of 64.3± 12.6 years, with a scope of 50 years; The study included 53 (55.2%) married people and 39 (40.2%) widows; there stayed a important variance in the occurrence distribution of

patients based on marital status between men and females (p = 0.001). . There is no significant variation in the frequency distribution of participants according to stress episodes between males and females (p = 0.6). 36 (36.0%) patients had previously been admitted to CCU.

Table 1: Demographic characteristics of subjects enrolled in the current study.

Characteristic	Male no. = 54	Female no. = 42	Total no. = ٩٦	P
Age (years)				
Mean ±SD	64.4±12.4	64.1±12.9	64.3±12.6	1.6 I NS
Range	50 Y	45 Y	68 Y	
Marital status				
Married, no. (%)	37 (68.5%)	16(38.1%)	53 (55.2%)	0.002 C H.S.
Widow, no. (%)	17 (31.5%)	22 (52.4%)	39 (40.2%)	
Separated no. (%)	0 (0%)	4 (9.5%)	4 (4.2%)	
Occupation				
Unemployed, no. (%)	52 (96.3%)	40 (95.2%)	92 (93.3%)	0.00 C NS
Employed/worker, no. (%)	2 (3.7%)	2 (4.8%)	4 (5.7%)	
Stress level				
Positive, no. (%)	28 (51.9%)	24 (57.1%)	52 (53.6%)	0.6 C NS
Negative, no. (%)	26 (48.1%)	18 (42.9%)	44 (45.4%)	

n: number of cases; SD: standard deviation; I: independent samples t-test; C: Chi-square test; NS: not significant at p> 0.05; HS: highly significant at p ≤ 0.01 S:significant at p(< 0.05-0.01)

Table 2:Age categories of the study subjects

Age categories	Frequency	Percentage(%)
40-49	6	6.25
50-59	8	8.36
60-69	19	19.74
70-79	28	29.19
>=80	35	36.46
Total	96	100.0

Regarding bad habits, 36 (35.6%) subjects were smokers, 98% had an adverse history of alcohol intake

, and 38 (37.6%) drank more than 3 cups of black tea daily; there was a significant difference in the frequency distribution of subjects according to smoking between males and females (p = 0.002) . There is no significant variation in the frequency distribution of participants according to stress episodes between males and females(p = 0.6).

Smoking ,alcohol ,tea ,coffee intake among subjects

Characteristic	Male n = 54	Female n = 42	Total n = 96	P
Smoking				
Positive, n (%)	26 (48.1%)	8 (19.0%)	3 4 (35.1%)	0.003 C H.S.
Negative, n (%)	28 (51.9%)	34 (81.0%)	6 2 (63.9%)	
Alcohol intake				
Positive, n (%)	2 (3.7%)	0 (0%)	2 (2.1%)	0.22 C NS
Negative, n (%)	52 (96.3%)	42 (100%)	9 4 (96.9%)	
Black tea intake				
>3 cups, n (%)	28 (51.9%)	8 (19.0%)	3 6 (37.1%)	0.004 C H.S.
2_3 cups, n (%)	22 (40.7%)	28 (66.7%)	5 0 (51.5%)	
<3 cups, n (%)	4 (7.4%)	6 (14.3%)	1 0 (10.3%)	
Coffee intake				
None, n (%)	45 (83.3)	40 (95.2%)	8 5 (87.6%)	0.16C NS
<4 cups, n (%)	7 (13.0%)	2 (4.8%)	9 (9.3%)	
>4 cups, n (%)	2 (3.7%)	0 (0%)	2 (2.1%)	

There was no significant difference in the frequency distribution of patients according to covid infection between males and females (p = 0.6)

Table 4.7: Viral infection, Covid infection and diagnosis among patients

Characteristic	Male n = 54	Female n = 42	Total n = ٩٦	P
Viral infection				
Positive, n (%)	6 (11.1%)	4 (9.5%)	10 (10.3%)	0.4C N.S.
Negative, n (%)	48 (89.9%)	38 (90.5%)	86 (88.7%)	
Covid infection				
Positive, n (%)	26 (48.1%)	22 (52.4%)	48 (49.5%)	0.68C N.S.
Negative, n (%)	28 (51.9%)	20 (47.6%)	48 (49.5%)	
Diagnosis of covid				
C.T.	2 (7.7%)	2 (4.8%)	4 (8.3%)	0.86C NS
PCR	24 (92.3%)	20 (47.6%)	44 (91.7%)	

n: number of cases; C: Chi-square test; NS: not significant at p> 0.05; HS: highly significant at p ≤ 0.01

Discussion

Our paper features 48 individuals with covid infection; 40% received the Pfizer/BioNTech vaccination and 6% received the Oxford/AstraZeneca vaccine. The clinical results and prognosis of A.F. in COVID-19 are uneven and ambiguous; nonetheless,

emerging data show an epidemiological link between A.F. and COVID-19. There is evidence to show that COVID-19 pneumonia patients with A.F., and especially those with newly diagnosed A.F., are at increased risk for complications. (6,7,8,9).

According to the most up-to-date data from the COVID-19 Job Strength at the "Italian National Institute of Health, 24.5%" of the 355 patients who did not make it through the ordeal ("mean age 79.5 years, 70%" males) had A.F. before contracting SARS-CoV-2. (10) Although reports of cardiac side effects from the COVID-19 vaccine are rare, there is still a lack of information on the risk of atrial fibrillation (A.F.).(11). In a small report by Fumagalli S, up to 75% of hospitalized COVID-19 geriatric patients had a history of AF. (12)

We discovered that in each subgroup of patients with A.F., nonsmokers were the clear majority due to the prevalence of other risk factors for A.F. in the patient population studied here. Nicotine may produce pro arrhythmic atrial fibrosis which makes the heart more susceptible to catechol amines, as shown in the Atherosclerosis Risk in Communities (ARIC) research, where the incidence of A.F. was 2.10 times higher than in individuals who never smoked. This link holds across gender. Increased carbon monoxide levels and the oxidative stress of smoking have also been related to arrhythmias. Recent epidemiological research on the link between smoking and A.F. has shown contradictory findings.

According to the results of the multivariate analysis, tobacco use may increase the danger of atrial fibrillation. However, statistical analysis showed no significant difference. (13) Furthermore, a trend showed that former smokers had a somewhat decreased chance of getting A.F. compared to current smokers. (14)Smoking for longer periods was also associated with a greater danger of developed kind 2 diabetes. Great blood sugar, insulin resistance, as well as hypertension are more likely to occur after long bouts of smoking heavily. Type 2 diabetes risk is also increased by smoking cigarettes, according to research by (15).

Conclusion

The current study concluded that there are specific risk factors that contribute to the development of atrial fibrillation in patients with diabetes, who practice bad habits such as drinking alcoholic beverages, smoking, drinking tea and coffee abnormally, in addition to the fact that infection with Covid-19 can be a person susceptible. Complications of atrial fibrillation.

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