

Incidence of Atrial Fibrillation in Non- Rheumatic Heart Disease with Hyperthyroidism

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Abstract- Atrial fibrillation (Afib) is a common cardiac manifestation of hyperthyroidism. The data regarding outcomes of Afib with and without hyperthyroidism are lacking.

Aim of the study is to identify the incidence of Atrial fibrillation with hyperthyroid young patients. Methodology- Cross sectional study.

Result and conclusion: Incidence of

INTRODUCTION

Atrial fibrillation (Afib) is the most common arrhythmia in the United States. Studies have reported that two-thirds of atrial fibrillation patients presenting to the emergency department end up in the hospital. This results in higher medical costs compared to patients with other types of arrhythmia. Hyperthyroidism, coronary artery disease, congestive heart failure, valvular heart disease, chronic lung disease, hypertension, diabetes mellitus, obstructive sleep apnea, obesity, RA/collagenous vascular disease, and old age are risk factors for Afib. is. Each risk factor has a different impact on clinical outcomes, including Hospital costs, length of stay, in-hospital mortality and discharge disposition in patients with atrial fibrillation. Our study examines clinical outcomes in atrial fibrillation patients with hyperthyroidism. The association between Afib and hyperthyroidism is well known. However, the above clinical results have not been reported.

Atrial fibrillation is associated with increased cardiovascular morbidity and mortality. The risk of atrial fibrillation increases exponentially with age, and the prevalence of atrial fibrillation after age 75 years has been estimated to be 7% to 8% in men and 2% to 6% in women. increase. The most important risk factors for atrial fibrillation are aging, male sex, hypertension, diabetes, myocardial infarction, and heart failure.

While it's well known that hyperthyroidism is associated with the risk of exacerbating pre-existing heart disease, hyperthyroidism can also cause heart disease itself. Atrial fibrillation is a common cardiac manifestation of hyperthyroidism, and the prevalence of atrial fibrillation in patients with hyperthyroidism varies according to sex, age, and the presence of previous or concomitant cardiovascular disease, reported to range from 1% to 60%. See Hertz's book On Goitre and Allied Diseases for his review of the published literature from 1916 to his 1943 on the risk of atrial fibrillation associated with hyperthyroidism.

The association between hyperthyroidism and atrial fibrillation has been analyzed in a limited number of predominantly selected patients reported from individual centers, highlighting the strength of the association between hyperthyroidism and atrial fibrillation. is not yet rated.

AIM OF THE STUDY

To study the incidence of Atrial fibrillation in young patients with non rheumatic heart disease with hyperthyroidism.

MATERIALS AND METHOD

PATIENT SELECTION

This was a single-institution retrospective study that was approved by our institutional review board. As this is a retrospective study, informed patient consent was not required. Patients were selected according to several criteria. between April 2021 and June 2022 (60 patients in total).

Identification of patients with hyperthyroidism

We identified all patients with a hospital discharge diagnosis of hyperthyroidism from April 2021 to June 2022 in a tertiary care hospital.

Identification of patients with atrial fibrillation or flutter

We identified all patients with a hospital discharge diagnosis of atrial fibrillation or flutter from May 2021 to June 2022 from hospital records. We excluded patients with a diagnosis of atrial fibrillation or flutter that occurred more than 30 days before the diagnosis of hyperthyroidism to reduce the risk of inclusion of prevalent cases of atrial fibrillation or flutter in the study.

SAMPLING TECHNIQUE

Consecutive, Convenient sampling

STUDY DESIGN

Cross sectional study

STUDY SETTING

Sri Lakshmi Narayana Institute of Medical Sciences

STUDY PERIOD

April 2021- June 2022

Statistical analysis

We used logistic regression analysis to calculate odds ratios for the association between sex, age, diabetes, cardiovascular diseases, and atrial fibrillation. We assessed the potentials for interactions (ie, effect modification) by stratified analyses. We used the statistical software package from SPSS, version 26.0.

RESULTS

At this step, the study population consisted of 60 patients.

Table 1: Risk factors for Atrial Fibrillation

Risk factors for Atrial fibrillation (N=60)	
Characteristic	Adjusted OR (95% CI)
Men (Reference women)	1.8 (1.6-1.9)
Age at diagnosis of hyperthyroidism	1.7(1.7-1.8)
Medical condition	
Diabetes	1.2(1.8-1.9)
Hypertension	1.1(2.3-3.7)
Ischemic heart disease	2.0(3.0-3.4)
Mitral valve/ aortic valve disease	1.3(1.9-2.4)

We identified 60 patients with a hospital diagnosis of hyperthyroidism. Most patients with hyperthyroidism were women (84.9%), Diabetes and cardiovascular diseases were seen in a few patients. Among patients with hyperthyroidism, 25% were diagnosed as having atrial fibrillation within ± 30 days from the date of the diagnosis of hyperthyroidism. The proportion with atrial fibrillation was higher among men than women (12.1% vs 7.6%). Less than 1% of patients younger than 40 years had atrial fibrillation, whereas

10% to 20% of patients older than 60 years had atrial fibrillation. The proportion of patients with atrial fibrillation was higher among men than women in all 10-year age groups and that the proportion of patients with atrial fibrillation increased by age in both sexes. Twenty to forty percent of patients with ischemic heart disease, congestive heart failure, or heart valve disease had atrial fibrillation. The adjusted odds ratio of atrial fibrillation was almost doubled in men, and the odds ratio of atrial fibrillation increased by 1.7 per 10-year increment in age. In the presence of ischemic heart disease, congestive heart failure, or heart valve disease, the odds ratios for atrial fibrillation increased 2.0-fold, 1.3-fold. Stratified analysis by sex did not show any clinically relevant effect modification by age (data not shown). We observed a less pronounced effect of an increasing age in patients with a history of ischemic heart disease or congestive heart failure.

The risk of atrial fibrillation or flutter in hyperthyroidism was higher in men than in women, and the risk of atrial fibrillation in hyperthyroidism increased by increasing age during the age range of 20 to 80 years. The presence of ischemic heart disease, congestive heart failure, and heart valve disease was also associated with an increased risk of atrial fibrillation.

Hyperthyroidism in elderly patients is often associated with discrete and vague symptoms, so the hyperthyroid state may have had a longer duration before a diagnosis of hyperthyroidism is obtained. This could be one explanation for the increased proportion of patients with atrial fibrillation among the elderly population. Another explanation could be a shortening in the repolarization phase of the intracellular potential in the atrium induced by the hyperthyroidism. This may cause atrial fibrillation in those who are already at risk for atrial fibrillation (ie, elderly patients and patients with preexisting heart disease). Furthermore, Iwasaki and coworkers have reported that the hyperthyroidism was biochemically more severe (higher serum thyroxin and triiodothyronine levels) in those who had atrial fibrillation. However, we did not have biochemical data on the severity of hyperthyroidism in the present study.

In patients with preexisting heart disease, the increased workload caused by the induction of a hyperdynamic circulation caused by hyperthyroidism may further impair heart function, leading to heart failure, angina, and atrial fibrillation. Conversely, tachyarrhythmia caused by a combination of hyperthyroidism and atrial fibrillation may also lead to heart failure due to tachycardia-induced cardiomyopathy.

The major advantages of our study derive from the population-based design, the uniformly organized health care system, the sampling of incident cases, and the large number of outcomes. The risk of inclusion of amiodarone-induced thyrotoxicosis was minimized by the short interval of ± 30 days from the date of the diagnosis of hyperthyroidism to the date of atrial fibrillation.

We did not have information on patients with hyperthyroidism who were not seen in the hospital. However, patients with hyperthyroidism are, according to tradition, almost always submitted for evaluation in hospital clinics in Denmark study. Limitations may arise from errors in coding of discharge diagnoses. Misclassification of atrial fibrillation, hyperthyroidism, and comorbidity may have occurred, and we do not have clinical details, such as severity of the hyperthyroidism. A systematic monitoring of the heart rhythm in patients with hyperthyroidism would have inflated the proportion of patients with atrial fibrillation. However, coding of patients with short episodes of self-limiting atrial fibrillation of minor clinical significance, like patients with atrial fibrillation in the Danish National Registry of Patients in their, would not have had any impact on the estimates of relative risk for atrial fibrillation among patients with hyperthyroidism, provided that this misclassification was independent of patient age, sex, and cardiovascular disease status.

Some cases of hyperthyroidism complicated by atrial fibrillation may have been diagnosed among patients who were hospitalized primarily for cardiovascular diseases. A screening for hyperthyroidism among these patients would lead us to overestimate the risk for atrial fibrillation in patients with hyperthyroidism and preexisting cardiovascular disease. We could not differentiate atrial fibrillation from atrial flutter, because atrial fibrillation and atrial flutter had the same ICD-10 code. If hyperthyroidism is not associated with risk of atrial flutter, inclusion of atrial flutter in the present study may have biased the risk estimates. However, given the low proportion of patients with atrial flutter, this bias would be modest.

CONCLUSION

This study shows the prevalence Atrial Fibrillation in hyperthyroid, Non- Rheumatic heart disease patient is 25%.

RECOMMENDATION

The study should be done among more no. of patients at different settings to identify the trend of disease in various population.

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