A Clinical Evaluation of Atrial Fibrillation in Rheumatic Heart Disease

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Abstract

Objectives: To estimate incidence of atrial fibrillation in patients of rheumatic heart disease, to study clinical correlation of atrial fibrillation in term of mitral valve area in mitral stenosis, to estimate incidence of systemic embolization and to find out association of atrial fibrillation with recurrent respiratory infections.

Material and Methods: Ninety-four cases were assigned with different groups according to type of valvular lesion, age group, sex and severity. The incidence of atrial fibrillation was compared among these groups. Patients were grouped according to the type of valvular lesion, age and mitral valve area. Incidence of different types of systemic embolization was studied in cases suffering from atrial fibrillation. We also looked for association of atrial fibrillation with respiratory tract infections.

Results: The incidence of atrial fibrillation was 41 out of 94 cases (43.61%). The highest incidence of atrial fibrillation was in the age group of 21-30 yrs (55%) and the incidence was more in females (72.72%) as compared to males (27.27%). The incidence of atrial fibrillation in patients with pure mitral stenosis was 48.2% and in cases of predominant mitral regurgitation 43.3%.

The incidence of atrial fibrillation in cases of mitral stenosis with mitral valve area <1 cm² was 70.4% as compared to 29.6% in cases of mitral stenosis with mitral valve area >1 cm².

Out of 41 cases of atrial fibrillation, nine had evidence of systemic embolization out of which six were cerebral (66.66%), two were peripheral (33.33%) and one was mesenteric (16.66%).

The respiratory infections were more commonly present in patients with atrial fibrillation as compared to patients without atrial fibrillation (24.39% Vs 5.66%).

Conclusions: The incidence of atrial fibrillation is significant in cases of rheumatic heart disease. The incidence is higher in females and in the age group of 21-30 yrs. The incidence of atrial fibrillation increases with severity of valvular stenosis. Systemic embolization is present in significant number of patients with rheumatic heart disease with atrial fibrillation. Cerebral embolization is more common as compared to peripheral and followed by mesenteric. The respiratory tract infection is more commonly present in patients with atrial fibrillation as compared to patients without atrial fibrillation.

Introduction

Rheumatic heart disease presents a problem in all parts of the world especially in developing countries. It is estimated that over 6.0 million children are affected by this disease.

Complications of rheumatic heart disease include cardiac arhythmias especially atrial fibrillation, congestive heart failure, infective endocarditis, angina and pulmonary embolism. In area with low standard of living as India, mitral stenosis tends to progress rapidly and may lead to serious disability early in life.

Comparative valvular involvement in rheumatic heart disease is evaluated in various studies. Mitral valve is affected more commonly as compared to aortic valve.¹ ²

Atrial fibrillation is the most
common complication, perhaps sequel to mitral stenosis. The incidence of atrial fibrillation increases when mitral valve area is <1 cm².

Systemic embolization is more common with atrial fibrillation than in sinus rhythm. Respiratory tract infections affect more patients with atrial fibrillation.

**Aims and Objectives**

To estimate incidence of atrial fibrillation in patients of rheumatic heart disease, to study clinical correlation of atrial fibrillation in term of mitral valve area in mitral stenosis, to estimate incidence of systemic embolization in patients with atrial fibrillation and to find out association of atrial fibrillation with recurrent respiratory infections.

**Material and Methods**

The patients were selected from wards and OPD. Male and female patients of rheumatic valvular heart disease presented with atrial fibrillation as evidenced by electrocardiogram echocardiography were included in the study.

Patients of atrial fibrillation of non-rheumatic origin were excluded from the study. Information regarding demographic data like age and sex was collected.

Detailed history of systemic embolization like weakness in part of body, abdominal pain and red colour stool, blackening of toes and fingers and calf pain, any sensory loss, loss of vision was obtained. History of respiratory tract infections like cough, rhinitis and sore throat also obtained. Investigations like haemoglobin, total leucocyte count, differential leucocyte count, erythrocyte sedimentation rate, sputum culture and staining, electrocardiogram, chest X-ray PA view, echocardiography, CT scan of head and Doppler were done.

All cases with mitral valve area <1 cm² were grouped as severe cases of mitral stenosis. Respiratory tract infections and systemic embolization were assessed on the basis of history, thorough physical and systemic embolization and investigations.

**Results**

Total 94 cases were taken and three groups were created according to the type of rheumatic valvular lesion. Group A consisted of pure mitral stenosis cases, (56 out of 94; 38 females, 18 males). Group B consisted of 15 cases of predominant mitral stenosis with mild mitral regurgitation (10 females and 5 males) and Group C had predominant mitral regurgitation. Twenty-three cases 14 were males and 9 females.

The population of study was divided according to age and sex (Table 1). Out of total 94 cases 37 (39.36%) were males and 57 (60.65%) females. The greatest distribution of cases were in 21-30 yrs of age group (42.55%).

The incidence of atrial fibrillation was 41 out of 94 cases in study population (43.61%). The highest incidence of atrial fibrillation was in group 3 (21-30 yrs) i.e 55%. In the age group of 21 to 30 years, 22 had atrial fibrillation, out of which 16 (72.72%) were females and 6 males (27.27%). Figure 1 shows incidence of atrial fibrillation according to age and sex.

Group A consisted of cases of pure mitral stenosis (56 cases) out of which 27 had atrial fibrillation. This group was further divided according to area of mitral valve. The incidence of atrial fibrillation was more in cases of mitral stenosis with valve area <1 cm² (70.37%) as compared to the cases of mitral stenosis with mitral valve area >1 cm² (29.62%). The incidence of atrial fibrillation in patients with pure mitral stenosis was 48.21% and in cases with predominant mitral regurgitation 43.28%.

<table>
<thead>
<tr>
<th>Group</th>
<th>Age</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (N=0)</td>
<td>&lt;10 yrs</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>II (N=10, 10.6%)</td>
<td>11-20 yrs</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>III (N=40, 42.6%)</td>
<td>21-30 yrs</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>IV (N=22, 23.4%)</td>
<td>31-40 yrs</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>V (N=14, 14.9%)</td>
<td>41-50 yrs</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>VI (N=8, 8.5%)</td>
<td>&gt;50 yrs</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 2 shows incidence of atrial fibrillation in different valvular lesion.

Out of 41 cases of atrial fibrillation 9 had evidence of systemic embolization. Out of which six were cerebral (66.66%), two were peripheral (33.33%) and one was mesenteric (16.66%).

In 53 cases without atrial fibrillation only three had evidence of respiratory tract infection (5.66%). Whereas out of 41 cases with atrial fibrillation ten had respiratory tract infections (24.39%) (p<0.05).

**Discussion**

Rheumatic heart disease is one of the important cause of atrial fibrillation. In studies conducted by Dicker E et al and Mohan Nair et al, the incidence of atrial fibrillation was significant in cases of rheumatic heart disease. In present study also we observed, significant incidence of atrial fibrillation in cases of rheumatic heart disease.

In the developed countries, the coronary artery disease is the most common cause of atrial fibrillation and atrial fibrillation is more common in men than women, while in developing countries rheumatic heart disease particularly mitral stenosis is the common cause of atrial fibrillation and atrial fibrillation is more common in women than men. Similarly, in present study we found increased incidence of atrial fibrillation in females.

The average age of patient having rheumatic heart disease developing atrial fibrillation in
Similarly we observed significant incidence of cerebral embolization in patients of rheumatic heart disease with atrial fibrillation.

Coulshed et al found that respiratory tract infections were commonly present in patients of rheumatic heart disease with atrial fibrillation. The present study supports this as respiratory tract infections were commonly present in cases of rheumatic heart disease with atrial fibrillation as compared to cases of rheumatic heart disease without atrial fibrillation.

**Conclusions**

The incidence of atrial fibrillation is significant in cases of rheumatic heart disease. The incidence is higher in females and in the age group of 21-30 yrs.

The incidence of atrial fibrillation increases with severity of valvular stenosis.

Systemic embolization is present in significant number of patients with rheumatic heart disease with atrial fibrillation. Cerebral embolization is more common as compared to peripheral and followed by mesenteric.

The respiratory tract infection is more commonly present in patients with atrial fibrillation as compared to patients without atrial fibrillation.

**References**

1. Padmavati S. Five year study of heart disease in India. *Indian Heart J* 1958; 10:3


