Variation of Age in Clinically Overt Mitral Stenosis Patients from Two Different Countries: A Cross-National Study

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Abstract

Rheumatic mitral stenosis (MS) remains common in developing countries and the disease advances more rapidly in underdeveloping areas. To compare the ages of clinically overt rheumatic MS patients from two different countries, retrospective data analysis was carried out from Institute of Medicine, TUTH, Kathmandu, Nepal and Shanghai Medical University, Shanghai, PR China. The age of 63 patients (18M, 45F), involved from Nepal, ranged from 11 to 68 years and the age of 154 study subjects (53M, 101F), involved from PR China, ranged from 10 to 79 years. Heart rhythm profile was recorded from the case history. Unpaired student’s t-test was used to compare the ages of clinically overt MS patients from two countries and patients’ ages were also compared according to the heart rhythm profile. The values of 50th and 95th percentile of age of study subjects from two different countries were separately calculated. P<0.05 was considered as the point of statistical significance. Clinically overt MS patients from Nepal were found significantly younger than their Chinese counterparts (34.5±15yr and 44.7±12yr, P<0.001). Fifty percent of Nepalese and Chinese study population were below 30.4yr and 43.8yr of age respectively and 95th percentile of Nepalese and Chinese study subjects were respectively 58.8 and 66.6 years of age. Patients in normal sinus rhythm (NSR) were found significantly younger than patients in atrial fibrillation (AF) in both countries (Nepal; 27.5±12.7yr and 40.7±14.4yr, P<0.001 and China; 36.3 ± 10.3yr and 49.4 ± 11yr, P<0.001). Nepalese NSR group was markedly younger than Chinese NSR group (27.5±12.7yr and 36.3 ± 10.3yr, P<0.01) and the age difference between AF groups from two countries also reached statistical significance (40.7±14.4yr and 49.4 ± 11yr, P< 0.01). Conclusions: Symptomatic Nepalese rheumatic MS patients are found significantly younger than Chinese MS patients. Earlier onset of AF among Nepalese MS patients can be found when compared with Chinese MS patients. The mean age of symptomatic rheumatic MS patients varies for country to country.

Key words: Atrial fibrillation, Mitral valve stenosis, Rheumatic heart disease

Introduction

Both rheumatic fever and rheumatic heart disease (RHD) remains common in developing countries (WHO/ISFC 1995). Mitral valve stenosis (MS) is the commonest valvular lesion among RHD patients and still a subject of major health concern in developing nations (Carabello and Crawford 1997). Rheumatic mitral stenosis is one of the major cardiac problems in Nepal (Sayami and Shrestha 1993, Karki and Lohani 1997). The incidence of rheumatic fever and prevalence of RHD are markedly variable in different countries (Stollerman 1997) MS remain very common in developing countries and the disease advances more rapidly in undeveloped and depressed areas (Selzer and Cohn 1972). Hence earlier onset of symptoms due to rheumatic MS can be expected among the patients from low living standard areas. However a comparative study of age status among clinically overt MS patients between two developing countries is not documented before. The main purpose of this study is to compare the ages of symptomatic MS patients from two developing countries.
Methods

Study population

Total 217 patients were recruited from two countries. The diagnosis and age profile of the study subjects were retrospectively analyzed from the case history of patients who were admitted from 1993 to 1997. The age of first admission was noted for those patients, who were repeatedly admitted. Sixty-three patients (18 males, 45 females) age ranged from 11 to 68 years were involved from the Institute of medicine, Kathmandu, Nepal and 154 study subjects (53 males, 101 females) age ranged from 10 to 79 years, were involved from the Shanghai Medical University, Shanghai, PR China. The whole study population included 71 male subjects and 146 female subjects and mean age ± SD was 41.8 ± 14 years.

Heart rhythm profile: normal sinus rhythm (NSR) and atrial fibrillation (AF) of all study subjects was recorded from the case history. Among 63 Nepalese study patients 30 were in NSR and 33 were in AF. One hundred fifty-four Chinese study subjects included 59 NSR and 95 AF patients.

Statistical analysis

Unpaired student’s t-test was used to test the statistical significance of difference between mean age of whole study subjects from two different countries. The mean age of each study groups were calculated according to the heart rhythm. The mean age of AF group was compared with NSR group among the study patients from the same country, then mean age of AF group and NSR groups from two countries were further compared and statistical significance was calculated with unpaired t-test. P<0.05 was considered as the point of statistical significance. The values of 50th and 95th percentiles of age in study subjects from two different countries were also separately calculated.

Results

Sex distribution and age comparison

The study involved total 217 subjects and two third of the study population (67%) were female and 33% were male. In 63 study subjects from Nepal, 71% were females and 29% were males. Among 154 Chinese study population, 66% were female subjects and 34% were male subjects. The mean age of Nepalese MS patients was found significantly younger than the mean age of Chinese MS patients (34.5 ± 15yr and 44.7±12yr p<0.001). Hence Nepalese clinically overt MS patients were younger than their Chinese counterparts (Table I).

<table>
<thead>
<tr>
<th>Items</th>
<th>Nepal</th>
<th>PR China</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age(Whole)</td>
<td>34.5±15</td>
<td>44.7±12</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Age(SR group)</td>
<td>27.5±12.7</td>
<td>36.3±10.3</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Age(AF group)</td>
<td>40.7±14.4</td>
<td>49.4±11</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>P50(Year)</td>
<td>30.4</td>
<td>43.8</td>
<td></td>
</tr>
<tr>
<td>P95(Year)</td>
<td>58.8</td>
<td>66.6</td>
<td></td>
</tr>
</tbody>
</table>

SR: sinus rhythm, AF: atrial fibrillation
P50: 50th percentile. P95: 95th percentile

Heart rhythm and age comparison

AF group was found older than SR group (40.7±14.4yr and 27.5±12.7yr. P<0.001) in Nepalese MS patients and the result was found same in Chinese MS patients (49.4±11yr and 36.3±10.3yr. P<0.001). Hence MS patients in SR group from both countries were significantly younger than their AF group compatriot. Statistical analysis showed that the Nepalese MS patients in SR group was markedly younger than Chinese MS patients in SR group (27.5±12.7yr and 36.3±10.3yr, P<0.01). Nepalese MS patients in AF were also found younger than Chinese MS patients in AF (40.7±14.4yr and 49.4±11yr, P<0.01), see the table I. Hence the earlier onset of AF among Nepalese MS patients was detected when compared with Chinese MS patients.

Discussion

The study subjects in the present study were recruited from the two developing countries where the prevalence of RHD is relatively high (WHO/ISFC 1995, Sayami and Shrestha 1993, Karki and Lohani 1997, WHO 1992). Mitral valve stenosis is the commonest valvular lesion in rheumatic heart disease.
Atrial septal defect is one of the major complications of MS and the overall incidence of AF in MS is estimated 40% (Selzer and Cohn 1972). Established AF is usually accepted as a manifestation of advanced MS (Olesen 1962) and almost half a century ago Wood (1954) reported that patients in AF were older than those in NSR in MS patients. Recently in one study the author (Limbu et al. 1998) has reported the same age status among MS patients. Unsurprisingly patients with AF from both countries are older than their compatriot with NSR in this study. Further cross-national study shows that Chinese MS patients in AF are significantly older than their Nepalese counterparts.

The comparison of ages of clinically overt MS patients according to social strata was limited by the unavailable history of socioeconomic status of each individual patients in this retrospective study. However the study was mainly focused on the comparison of the ages of clinically overt MS patients from two different countries and the study population was recruited from two key institutes of the respective countries, where MS patients are enrolled from all over of the country. Finally the result of the study showed that, the progression of clinically overt rheumatic MS is more rapid in Nepal when compared with China.

Clinical implications

This study mainly conveys the message that Nepalese MS patients become clinically overt much more early than Chinese MS patients. Almost half of Nepalese symptomatic MS patients are younger than 30 years of age. A major complication of rheumatic mitral stenosis is AF that associates with systemic embolism (Coulshed et al. 1970) and extensive morbidity and mortality (Carabello and Crawford 1997). Significantly earlier onset of AF (around 40 years of age) is found in Nepalese MS patients when compared with Chinese MS patients. On one hand the younger age group of symptomatic Nepalese MS patients and the earlier onset of AF reflect the inadequacy of preventive medical care and poor awareness of health care in the country. On the other hand, clinically overt rheumatic mitral stenosis in productive age group directly affects the economy of the nation. So the awareness of health care and prevention of rheumatic fever should be the primary concern of this nation to prevent rheumatic mitral stenosis, which directly degrades the quality of life, where the prevalence of rheumatic heart disease is still a problematic disease in a considerable number of population (NHRC/WHO 1991), according to the survey.

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References


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