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Younger age at Onset of Schizophrenia in Females: A NIMHANS Record-Based Study

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Abstract

Case records of patients (n = 505) with a diagnosis of schizophrenia (ICD-10, F-20) were reviewed. The age at onset (AAO) was obtained from the recorded age and duration of illness. The mean AAO was not different between the sexes. However, significantly higher proportion of females than males had AAO 20 years or younger. Survival analysis of the data of all patients with AAO 30 years or younger also confirmed significant sex differences; females were represented more in the younger age. The results are in contrast with those from Western studies demonstrating younger AAO in males. The results also confirm younger AAO in females observed in an earlier record-based study from this centre.

Key words -
Schizophrenia,
Sex,
Age at onset

Differences in age at onset (AAO) of dementia precox between males and females were noted first by Kraepelin himself. Manfred Bleuler too observed that 51% of male schizophrenics were hospitalized by the age of 25 as against only 39% of females. Several workers have later examined this issue with different standards of research. The older studies, using hospitalisation as a measure of onset of illness, found that male schizophrenics were younger at admission than females [1], [2], [3], [4], [5], [6]. A record-based trans-national study by Hafner et al [7] also confirmed younger age at admission for male schizophrenics than for females. Later workers used a different definition - age at which an immediate family member noted psychiatric symptoms in the patient. Younger AAO for males than for female schizophrenics was confirmed [8], [9]. In a more recent trans-national WHO study, Habrechet et al [10] also found younger AAO of schizophrenia in males. One study contradicts these findings [11]. They recorded that males were less likely than females to have an early age at onset. Also proportionately fewer males than females were first hospitalized before age of 17 years.

Some studies [12], [13] however, did not find sex differences in AAO of schizophrenia. Likewise, Indian data from IPSS [14] and yet another independent study [15] found no sex differences in age at onset of schizophrenia.

In this context it is significant that data from European countries [10] showed earlier AAO for males, but data from other parts of the world - Africa, India [11], [15] did not do so. Hence there is a need to examine this issue of age at onset of schizophrenia between sexes in our population.

Methods

Patients registered in the NIMHANS hospital during the year 1992 with a diagnosis of schizophrenia (ICD - 10, F-20) [16] formed the sample of the study. Their case files were reviewed by two psychiatrists to extract gender, age as indicated in the hospital record, total duration of illness as reported by the patient/informant and the 4 digit ICD-10 diagnosis. AAO was derived from the recorded age and total duration of illness. For the latter, we included the first onset of symptoms if the illness had episodic history. Patients registered in child guidance clinic viz, age at consultation < 16 years were not included. Data was analysed using SPSS 6th version. Independent sample t-tests, chi-square tests and survival analysis (Kaplan-Meier statistic) were used.

Results

The sample consisted of 505 patients with a diagnosis of schizophrenia F 20.0 to 20.94. More than half of them (55%) received outpatient treatment and 227 inpatient treatment. Sixty-four percent (n = 322) were males while the rest were females (n = 183). Mean (SD) AAO for males was 32.01 (10.0) years and for females 32.62 (12.1) years ($t = 0.6$, $p > 0.5$). However the age distribution (Table I) indicates that higher proportion of females were ill at or below 20 years, and this is statistically significant ($X^2 = 7.3$, $P < 0.02$).

In this sample however, 58 patients had AAO above 45 years. One of the diagnostic systems exclude this group for diagnosis of schizophrenia. Hence, the data was also separately analysed for those with AAO 45 years or younger. This sample consisted of 447 patients, of whom 290 (65%) were males and 157 (35%) females (Table I). Mean (SD) AAO for males in this group was 29.6 (7.1) years and females 29.0 (8.2) years ($t = 0.84$, $p > 0.7$). However the age distribution (Table I) indicates that higher proportion of females were ill at or below 20 years, and this is statistically significant ($X^2 = 8.7$, $P < 0.02$).

Table I - Distribution of schizophrenics (n = 505) by gender and age at onset (AAO)

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Figures in parenthesis refer to the sample with AAO < 45 years.

Survival analysis was conducted to elucidate the difference between the two sexes in the subgroup with AAO less than the mean of the sample (32 years). There were 271 patients with age at onset 30 years or younger with 178 males and 93 females. As seen from the diagram (Figure I), the cumulative risk of illness is higher among females than males in the age range of 20-25 years. The survival analysis (Kaplan-Meier statistic) indicated that sex difference in age at onset was significant ($P < 0.05$).

.***The risk of becoming schizophrenic is higher for females in the age range 20-25 years***

Discussion

In this study proportionately more females than males developed schizophrenia at an younger age. The mean AAO of schizophrenia in the two sexes however, was not significantly different. This is because at later ages men catch up with women and achieve comparable mean overall AAO.

These findings are in contrast with most earlier findings demonstrating younger AAO of schizophrenia in males. At the outset it may appear that the present study merely found absence of differences in AAO between the two sexes; the mean AAO in two sexes was not different. However a closer analysis of the data revealed that proportionately more females became ill at younger age (Table I), a finding confirmed by survival analysis of data.

Though these results were based on case record data, there are several grounds to support their validity. First, the age in the case file was recorded by non-medical hospital staff uninvolved in the present exercise and hence unbiased. Errors/inconsistencies, if any, are likely to occur comparably in both sexes. Second, the patient's clinical history (duration of the illness) was recorded by residents/PG students and invariably cross-checked by a different clinician. This information too can be presumed to be free from systematic bias, both sexes having equal chances of any inconsistency. It is of interest to note that an earlier record-based study from this centre [17] also revealed similar findings. In this study the authors had examined case files of ICD-0 schizophrenia (293) for the years 1981 & 82. Proportionately more females than males had developed symptoms at earlier age.

These findings both call for and justify prospective investigations with careful verification of date of birth as well as the precise dating of onset of illness especially in non-European centres.

Younger AAO in male schizophrenics observed in European centres was not replicated in other centres. Data from our centre [17] and the present study demonstrate that females have younger AAO, suggesting a contrary phenomenon. Therefore, the biological explanations for younger AAO for males, offered by European research [18] may not be entirely satisfactory. These authors have mooted a protective effect of earlier puberty in females and gondal hormones thereof against dopaminergic dysfunction. Therefore the AAO in females was delayed. The findings of younger AAO in females observed from our centre, although needs confirmation in prospective research, demands different explanation. It is likely that earlier release of gonadal hormones in females may in fact make them more susceptible to develop psychotic illness. It is known that psychotic illnesses have higher prevalence in post partum women who too have higher levels of gonadal hormones.

In summary, the younger AAO of schizophrenia is males is not universal. Although this study found no sex difference in the mean AAO, proportionately more female schizophrenics became ill at younger age. The finding merits further attention and replication in prospective research. So also the biological explanation mooted by earlier researchers for younger age at onset in males merits reconsideration in view of the finding to the contrary.

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