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Research Paper

Early And Adult Onset Schizophrenia- A Comparision

Medical Science

KEYWORDS : Early onset, adult onset, schizophrenia.

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ABSTRACT

BACKGROUND: Over the last few decades, research regarding the age of onset of schizophrenia and its relationship with other clinical variables has been incorporated into clinical practices. However, reports of potential differences in demographic and clinical characteristics between early and adult onset schizophrenia spectrum disorders have been controversial.
AIMS AND OBJECTIVES: This study aims to assess difference in demographic and clinical characteristics correlated with age of illness onset in schizophrenia spectrum disorders.
METHODS AND METHODOLOGY: This study was conducted at the psychiatry dept of ASRAM medical college and hospital, Eluru, Andhra Pradesh. This is a tertiary hospital and thirty patients with adolescent schizophrenia (early onset group; age 13- 18 years) drug naive, first episode were compared with thirty patients with adult onset schizophrenia (30-40 years) with in 1 year from June 2012 to June 2013 based on socio demographic profile, illness onset, subtype of schizophrenia, clinical features, family history and premorbid function. They were studied by interviewing clinically and applying rating scales. The data thus collected was tabulated and discussed. Statistical analysis of the data was carried out using chi square test for categorical variables and student- t test for continuous variables. Pearson correlation test was used to final association between variables studied.
RESULTS: There were no significant differences between the groups with respect to education and duration of untreated psychosis. Most of the patients with early onset (adolescent) schizophrenia had insidious onset compared to adult onset group. Disorganized schizophrenia was the predominant subtype in adolescents compared to paranoid subtype in adults. The early onset group had greater severity of illness and higher disorganization and negative symptom scores. Early onset schizophrenia group had positive family history (30%) in first degree relatives by about three times that in adult onset group (10%). The global function scores and premorbid adjustment scores of adolescent onset group was poorer. The pre morbid adjustment was poorer in the presence of negative symptoms only in the early onset group. The group of early onset schizophrenia with positive family history had greater negative symptoms at presentation. In early onset schizophrenia positive family history of schizophrenia is associated with greater negative symptoms and greater illness severity at onset.
CONCLUSION: This study highlights the importance of factors like negative symptoms, disorganization, positive family history of schizophrenia and poor premorbid function all of which have been put forth in previous studies as predictors of poor outcome in early onset (adolescent) schizophrenia.

INTRODUCTION

Schizophrenia is a challenging disorder that usually begins in late adolescence and early adulthood. Its prevalence rate is 1%.

Over the last two decades or so molecular imaging studies have refined our understanding of the pathophysiology underlying the development of psychosis and cognitive impairments.[1]

Pre synaptic dopaminergic dysfunction is a consistent and widely replicated finding in PET and SPECT studies of schizophrenic molecular pathology. However serotonergic alterations are much less consistent, and there is currently little or no molecular data or a number of other key neurotransmitter systems. The development of techniques to reliably image the release of serotonin and glutamate is an area of active research and will be invaluable in refining the understanding of the pathophysiology of psychotic disorders.[2]

Typically the onset of schizophrenia is in early adulthood with less frequent onset in adolescence and rare onset in childhood in the literature, the early onset schizophrenia (EOS), or adolescent onset schizophrenia, varies with studies defining it as onset before age 17-21.[3, 4, 5]

Quite similarly, the age of onset in very early onset schizophrenia (VEOS) or childhood onset schizophrenia (COS) also varies across studies with definitions before 12-15 years of age, the most common definition of EOS is onset before the age of 18, the most common definition of VEOS is onset before 13.[4,6,7,8] Wery in 1921 proposed the use of term early onset to describe adolescent onset schizophrenia between ages 13-17 (both included). According to practice parameters issued by American academy of child and adolescent psychiatry[4], early onset schizophrenia (EOS) (adolescent schizophrenia) is defined as onset before 18 yrs age, with very early onset (VEOS) developing before 13 years.

While adult onset schizophrenia (AOS) has been studied in great detail for many decades, research on EOS and VEOS is still more limited, partly due to its low prevalence. There is considerable overlap in the symptoms of schizophrenia in children and adolescents with other disorders like depression and bipolar disorder, making the differentiation difficult. The nature of symptoms varies and the children are also very susceptible to leading questions making it difficult to arrive at the correct diagnosis*. Available evidence on the outcome of EOS and VEOS points to the still rather poor prognosis of early manifestations of schizophrenia.[9, 10]

EOS research findings continuously point towards continuity between early and adult onset schizophrenia with the former possibly being a more severe variant of the latter[11].Studying younger onset cases can provide useful insights into the neurobiological mechanisms of schizophrenia and the complexity of gene-environmental interactions leading to the emergence of this debilitating disorder [12].

Also recent studies have suggested that early treatment may reduce the decline in functioning and long- term impairments commonly associated with schizophrenia. Therefore study of EOS can contribute significantly to our better understanding of schizophrenia.

AIMS AND OBJECTIVES:

The aims and objectives of this study are as follows-

To evaluate the differences in clinical features between adolescent (EOS) schizophrenia and the adult onset group (AOS)

To compare the premorbid adjustment of the two groups.

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To assess the differences between the two groups with respect to the following variables:

- Type of onset
- Gender distribution
- Family history of schizophrenic in the first degree relatives.
- DUP-Duration of Untreated Psychosis.

MATERIALS AND METHODS:

The study was conducted at the psychiatry dept of ASRAM Medical College and hospital, Eluru, Andhra Pradesh. This is a tertiary hospital. 30 patients satisfying the DSM IV criteria for schizophrenia in the age group 13 to 18 years (Early onset schizophrenia group) coming to the psychiatry department within 1 year from June 2012 to June 2013 were evaluated. The cases and controls were chosen from consecutive patients. The socio demographic data, clinical features and premorbid function were compared to a control group which consisted of 30 patients with schizophrenia in the age group 30-40 years (Adult onset schizophrenia) both cases and controls were experiencing their first episode psychosis and were drug naive.

Informed consent was obtained from all patients and guardians in case of adolescents. The patients and informants were interviewed clinically and rating scales applied. Information regarding premorbid function and family history of schizophrenia was sought from relatives. The following scales were used.

- Pro forma for socio demographic data
- Brief psychiatric rating scale (BPRS).
- Scale for assessment of positive symptom (SAPS).
- Scale for assessment of negative symptom (SANS).
- Premorbid adjustment scale (cannon-spoor etal, 1982).
- Global assessment of functioning scale (GAF).
- Family history research diagnostic criteria.

RESULTS

Table 1- Distribution based on age of onset.

	GROUP				Student T-Test
	EOS		AOS		
	Mean	S.D	Mean	S.D	
Age of onset	16.2	0.64	33.15	2.53	

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The mean age of onset in early onset group was 16.20, SD (0.64)

The mean age of onset in Adult onset group was 33.15, SD (2.53)

Table 2 – Distribution based on gender

		GROUP		TOTAL
		EOS	AOS	
SEX	MALE	16	18	34
	FEMALE	14	12	26
TOTAL		30	30	60

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
In the early onset schizophrenia group 53.3% (n=16) were males and 46.6% (n=14) were females.
In the adult onset schizophrenia group 60% were males (n=18) and 40% (n=12) were females.
The gender ratio was found to be 1.14:1 in the early onset group and 1.5:1 in the adult onset group.
Males have a predominant representation in both early onset and adult onset schizophrenia.
There was no statistically significant gender difference between the 2 groups.

Table 3-Comparison based on educational status

	GROUP				Student T- Test
	EOS		AOS		
	Mean	S.D	Mean	S.D	
Education (in year)	7.43	1.59	7.87	2.54	T=0.79 P=0.43 (s)

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
There was no statistically significant difference in educational status between the 2 groups.

Table 4-Comparison based on duration of untreated psychosis (DUP)

	GROUP				
	EOS		AOS		
	Mean	S.D	Mean	S.D	Student T- Test
DUP(Months)	9.93	4.61	8.67	2.58	T=1.31 P=0.90 (NS)

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The mean duration of untreated psychosis (months) in early onset group was 9.93 (S.D4.61) and the adult onset group it was 8.67 (S.D 2.58)

Duration of untreated psychosis was longer in the early onset group compared to adult onset group. No statistically significant difference was observed in our study.

Table 5- Distribution based on type of onset of illness.

EOS		GROUP		TOTAL
		AOS		
Type of onset	Insidious	28	21	49
	Acute	2	9	11
Total		30	30	60

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
In the early onset group 93.3 %(n=28) had an insidious type of illness and 6.6% (n=2) had an acute onset.

In the adult group 70% (n=21) had insidious onset and 30% (n=9) had acute onset of illness.

The early onset schizophrenia patients had predominantly insidious type of illness onset and the results were statistically significant with P value of 0.02.

Table 6- Distribution based on subtype of schizophrenia

	GROUP		TOTAL
Subtype	EOS	AOS	
Catatonic	0	1	1
Disorganized	15	0	15
Paranoid	4	16	20
Undifferentiated	11	13	24
Total	30	30	60

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
In the early onset group 50% (n=15) had disorganized schizophrenia, 36.6% (n=11) had undifferentiated subtype.13.3% (n=4) had paranoid subtype. None of the subjects were diagnosed to have catatonic schizophrenia.

In the adult onset group 53.3% (n=16) had paranoid schizophre-

nia, 43.3% (n=13) had undifferentiated subtype and 3.3% (n=1) had catatonic schizophrenia.

The subtype of schizophrenia predominant among the early onset group was disorganized type and in the adult onset group it was paranoid schizophrenia. The results were statistically significant P (0.001).

Table 7- Comparison based on BPRS Scores

	EOS		AOS		
BPRS	Mean	S.D	Mean	S.D	Student T-Test
Mean BPRS	21.4	6.46	15.6	3.5	t=4.32 p=0.01(S)

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The mean BPRS score in the early onset group was 21.40 (S.D 6.46) and in the adult onset group was 15.60 (S.D=3.50). The difference between the groups was significant (P=0.001).

Table 8- comparison based on SAPS Scores.

	GROUP				
	EOS		AOS		
SAPS	Mean	S.D	Mean	S.D	Student T-Test
Mean SAPS	27.7	12.7	25.4	12.2	t=0.71 p=0.48(NS)

Mean SAPS scores in the early onset group was 27.70 (S.D=12.70) where as in the adult onsets group it was 25.40(S.D=12.23). Although the mean score was higher in the early onset group, the difference was not to be statistically significant (P=0.48).

Table 9 – comparison based on psychotic symptom score

	GROUP				
	EOS		AOS		
SAPS	Mean	S.D	Mean	S.D	Student T-Test
SAPS Psychotic Symptom Score	2.93	2.38	4.53	2.66	t=2.46 p=0.02(S)

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The psychotic symptoms score was calculated as sum of SAPS global ratings of hallucinations and delusions.

The mean score in the early onset group was found to be 2.93 (S.D 2.38) and in the adult onset group it was 4.53 (S.D=2.66)

Thus the mean psychotic symptom score was higher in the adult onset group and the difference found to be statistically significant (p=0.02).

Table 10 – comparison based on disorganization score

	GROUP				
	EOS		AOS		
SAPS	Mean	S.D	Mean	S.D	Student T-Test
SAPS- disorganization score	6.10	3.52	3.30	1.12	T=4.16 P=0.001 (S)

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The disorganization score was calculated as the sum of SAPS global ratings of disorganized / bizarre behaviour, positive formal thought disorder and inappropriate affect.

The mean score was 6.10 (S.D=3.52) in the early onset group and 3.30. S.D=1.12) in the adult onset group. Disorganization score was found to higher in the early onset group and the result was statistically significant (p=0.001)

Table 11 – Comparison based on SANS Score

	GROUP				
	EOS		AOS		
SANS	Mean	S.D	Mean	S.D	Student T-Test
Mean SANS Score	46.27	18.10	30.73	15.82	t=3.54 p=0.001(S)

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The mean SANS score in early onset schizophrenia group was 46.27 (S.D=18.10) and in the adult onset group it was 30.73 (S.D=15.82)

The score was significantly higher in the early onset group and the results were statistically significant at p=0.001

Table 12 - Comparison based on negative symptoms score

	GROUP				
	EOS		AOS		
SANS	Mean	S.D	Mean	S.D	Student T-Test
Mean negative symptoms score	8.47	4.26	5.57	2.62	T=3.18 P=0.002 (S)

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The negative symptoms score was calculated as the sum of SANS global ratings of alogia, avolition, anhedonia and affective flattening.

In the early onset group, the mean negative symptoms score was 8.47 (SD=4.26) and it was 5.57 (SD=2.62) in the adult onset group.

The score was higher in the early onset group and the results were statistically significant (P=0.002)

Table 13 - Comparison based on family history of schizophrenia

Family history EOS		GROUP		
		AOS	TOTAL	
FHRDC	Negative	21	27	48
	Positive	9	3	12
TOTAL		30	30	60

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The family history was assessed by applying family history research diagnostic criteria (FHRDC) to first degree relatives of patients with schizophrenia.

In the early onset group 30% (n=9) had positive family history of schizophrenia and in the adult onset group it was 10% (n=3)

Applying chi square test the difference was found to be statistically significant (p=0.05)

Table 14 – Comparison based on GAF Scores

	GROUP		TOTAL
	EOS	AOS	
GAF Poor	23	16	39
GAF Moderate	7	14	21
Total	30	30	60

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The patients were grouped based on the GAF scores into three categories 100-71=Good, 70-41=Moderate and 40-0= Poor.

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None of the patients in both the groups had scores in the range of 100-71.

Moderate GAF score was found in 23.3% (n=7) in the early onset group and 46.6% (n=14) in the adult onset group.

Poor GAF score was seen in 76.6% (n=23) of the early onset group and 53.3% (n=16) of the adult onset group.

The differences between the two groups were statistically significant with a P-value of 0.05.

Table 15 – comparison based on premorbid adjustment

	GROUP				
	EOS		AOS		
PAS Score	Mean	S.D	Mean	S.D	Student T-Test
Average PAS score	.57	.08	.32	.08	t=12.42 p<0.001 (S)

EOS: Early Onset Schizophrenia (Adolescent Schizophrenia)
AOS: Adult Onset Schizophrenia
The average PAS score was calculated from the subscale scores relevant for each age group.

The average PAS score was 0.57 (S.D=0.08) in the early onset group and 0.32 (S.D=0.08) in the adult onset group.

The rating in PAS score is such that in each item zero denotes hypothetically the healthiest and six denotes the least healthy end. So higher scores on PAS are suggestive of poorer premorbid function.

The average PAS score was higher in the early onset group compared to adult onset group and the difference was statistically significant (P value < 0.001)

DISCUSSION

In the present study, the mean age of onset in early schizophrenia (Adolescent) group was 16.20, S.D=0.64. This is comparable with most of the previous studies by Kolvin (1971)[13] (Table 1).

Regarding gender differences males have a predominant representation in both early onset and adult onset schizophrenia. There was no statistically significant difference between the two groups (Table 2). The results of the study are on par with the study by Jacobsen and Rapoport (1999)[14] which found no gender difference.

Also a study by basappa etal in 2008 done in rural south Indian setting showed similar findings. Our study brought out a gender ratio of 1.14:1 in the early onset group and 1.5:1 in the adult onset group. However studies by Kolvin (1971)[13] and werry et al [21] (1991) have reported gender ratios of approximately 2:1

Our study found no significant difference between the adult and early onset schizophrenia with respect to educational status (table 3)

Duration of untreated psychosis in months (DUP) (Table 4) was longer in the early onset group 9.93 (S.D=4.61) compared to adult onset group 8.67 (S.D=2.58) which is consistent with other studies by Hollis [16] (2000) & Ballagear et al (2005) [17]. However no statistically significant difference was observed in our study. The actual duration of untreated psychosis is much longer in the community samples and is the target of early psychosis prevention and intervention programmes which aim at early detection and initiation of treatment to improve out come.

The early onset schizophrenia patients had predominantly insidious type of illness (93.3%) compared to adult onset group (70%) and the results were statistically significant with P value of 0.02 (Table 5). The findings are on par with studies by Hollis et al (2000)[16] and Joa et al (2009)[18]. Insidious onset has been found to be a prognostic predictor for poor outcome in the early onset (adolescent) group according to Hollis (2000)[16].

The subtype of schizophrenia predominant among the early onset group was disorganized type and in the adult onset group it was paranoid schizophrenia. The results were statistically significant (p=0.001) (Table 6)

The findings are similar to studies by Hollis et al (1995) (2000)[16]. Ballageer et al (2005)[17] and the practice guidelines put forth by American academy of child and adolescent psychiatry[4].

The mean BPRS score in the early onset group was higher and the difference was statistically significant (p<0.001) (Table 7). The results are similar to studies by young et al (1995)[19], Hafner et al (1995)[20].

The mean SAPs score was higher in early onset schizophrenia group but the difference was not found to be statistically significant (p=0.48) (Table 8). The results are similar to those reported by previous studies by Werry et al (1991)[21] Schultz (2000)[22] et al and Ballageer et al (2005)[17]

The psychotic symptom score was calculated as sum of SAPS global ratings of hallucinations and delusions. The mean score in the early onset group was found to be 2.93 (S.D=2.38) and in the adult onset group it was 4.53 (S.D=2.66) (Table 9). Thus the mean psychotic symptom score was higher in the adult onset group and the difference found to be statistically significant (p=0.02). This finding is similar to study by Schultz et al (2000)[22] and MC Clellan et al (2000)[4] which reported that early onset schizophrenia patients have fewer positive symptoms compared to adult onset group.

The disorganization score was 6.10 (S.D=3.52) in the early onset group and 3.30 (S.D 1.12) in the adult onset group (Table 10). Disorganization score was found to be higher in the early onset group and the results were statistically significant (p=0.001). This finding is in keeping with studies by Hollis (2000)[16], Shultz et al (2000)[22], Ballageer et al (2005)[17], and Nicolson et al (1999)[23].

According to Hollis (2000)[16], disorganization is a predictor of poor outcome in adolescent schizophrenia.

The mean SANS score was significantly higher in the early onset group and the results were statistically significant at p=0.001(Table 11). The results are similar to studies by Hollis (2000)[16], Ballageer et al (2005)[17], Schultz et al (2000)[22] Werry et al (1991)[21], Russel et al (1989)[24] and Green et al (1992)[25].

In the early onset group the mean negative symptoms score was 8.47 (S.D=4.26) and it was 5.57 (S.D=2.62) in the adult onset group (Table 12). The score was higher in early onset group and the results were statistically significant (p=0.002). Those findings are consistent with studies by Schultz et al (2000)[22] who reported that negative symptom score is higher in early onset Schizophrenia.

The family history was assessed by applying family history research diagnostic criteria (FHRDC) to first degree relatives of patients with schizophrenia. In the early onset group 30% (n=9) had positive family history of schizophrenia and in the adult onset group it was 10% (n=3).

Applying chi square test the difference was found to be statisti-

cally significant (p=0.05) (Table 13). The positive family history of schizophrenia in early onset group was three times the rate found in adult onset group. The results are consistent with studies by Green et al (1992)[25], Kolvin (1971)[13], werry et al (1991)[21] which reported that increased family history of schizophrenia has been found in relatives of adolescents with schizophrenia.

On assessing the global functioning moderate GAF score was found in 23.3% (n=7) in the early onset group and 46.6% (n=14) in the adult onset group (Table 14) Poor GAF score was seen in 76.6% (n=23) of the early onset group and 53.3% (n=16) of the adult onset group. The difference between the two groups was statistically significant with a P, value of 0.05. The results are comparable to study by Rabinowitz et al (2005)[26] who found that GAF scores were poor in adolescent group before hospitalization and it would be a predictor of length of hospital stay and future outcome.

The average PAS (Premorbid adjustment scale) score was 0.57 (S.D=0.08) in the early onset group and 0.32 (S.D=0.08) in the adult onset group (Table 16). The rating in PAS is such that in each item zero denotes hypothetically healthiest and six denotes the least healthy end. So higher scores on PAS are suggestive of poorer premorbid function. The average PAS score was higher in the early onset group compared to adult onset group and the difference was statistically significant (P value < 0.001). The results are on par with studies by Hollis et al (1995)[27]: Nicholson et al (1999)[23], Mayer et al (1993)[28] castle et al (1997)29. Vourdas et al (2003), who reported higher rates of premorbid impairment in early onset schizophrenia compared to adult onset group.

CONCLUSIONS

Most of the patients with early onset (Adolescent) schizophrenia had insidious onset compared to adult onset group.

- Disorganized schizophrenia was the predominant subtype in adolescents compared to paranoid in adults.
- The severity of illness was more in early onset schizophrenia.
- The early onset group had higher disorganization and negative symptom scores.
- The early onset schizophrenia group had positive family history (30%), In first degree relatives, rate three times that in adult onset group.
- The global function scores and premorbid adjustment scores of early onset group were poorer.

The study highlights the importance of factors like negative symptoms, disorganization, positive family history of schizophrenia and poor premorbid function all of which have been put forth in previous studies as predictors of poor out come in early onset schizophrenia.

LIMITATIONS

Small sample size.

This is a hospital based study. A community study would give the correct representation of variables like duration of untreated psychosis (DUP).

Since the sample consisted of patients referred to a tertiary service, our patients could be more severely ill and therefore it might not be possible to generalize the results to community samples.

The role of prognostic predictors has to be validated through prospective studies.

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