



A Comparative Study of Cognitive Deficits & Extrapyramidal Symptoms Between Patients Taking Typical and Atypical Anti-Psychotics

KEYWORDS

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INTRODUCTION

The typical and atypical antipsychotic drugs are used in the treatment of psychosis which can reduce the positive symptoms of psychosis in about 8-15 days.

Although atypical antipsychotics are thought to be safer than typical antipsychotics, they still have severe side effects, including tardive dyskinesia, and Neuroleptic Malignant Syndrome.

Cognitive impairment has long been recognized as central to the abnormalities that occur in schizophrenia.

Rather than improving cognitive deficits, conventional antipsychotics may instead contribute to the impairment seen in many patients with schizophrenia. The atypical antipsychotic drugs may be effective in this area, either in amelioration of the cognitive impairment that occur in schizophrenia (or) in arresting any continuing decline.

Numerous studies indicates that incidence and severity of extrapyramidal syndrome with second generation (atypical) antipsychotics are less when compared to first generation antipsychotics.

To measure the cognitive status of the patients Mini Mental Status

Examination (MMSE) scale is used To assess the EPS of the patients taking antipsychotics, 3 scales were used they are

1. Extrapyramidal side effects scale –
2. Bares Akathisia Rating Scale (BARS),
3. **Abnormal Involuntary Movement Scale (AIMS)**

AIMS AND OBJECTIVES

1. Two groups in the age range of 20-60 years comprising Group A(n=40) and group B(n=40) are taken for study. Group A patients received typical antipsychotics and Group B patients received atypical antipsychotics.
2. To compare the cognitive deficits between patients taking typical and atypical antipsychotics.
3. To compare the EPS between the patients taking typical and atypical antipsychotics.

MATERIALS AND METHODS

The study was conducted in the Outpatient and Inpatient of the Dept. of Psychiatry, ASRAM, Eluru between the period of August 2012 to July 2014.

The patients diagnosed with schizophrenia, schizophreniform disorders, schizo-affective psychosis, delusional disorder, psychotic symptoms with affective disorders and other psychotic syndromes as the criteria led down on diagnostic statistical manual of mental disorder- IV, Text revision (DSM-IVTR) in the age group of 20 to 60 years, were taken up for the study. Both the sexes were included.

Exclusion criteria :

Patients on mood stabilizers

On ECT

Patients with ICSOL

Meeting above criteria 100 patients with any psychotic symptoms (as mentioned above) were taken. 8 patients denied to participate and 10 patients there regularly irregular and 2 left without any information.

Therefore 80 patients taking typical and atypical antipsychotics (40 ill patients each) were taken because they were co-operative to participate in. Both (typical and atypical) antipsychotics were taken according to

Chlorpromazine therapeutic dose equivalents as per (APA.1997) guidelines. antipsychotics. At the beginning of the study the socio demographic data (Name, Sex, age etc.) were recorded.

Extrapyramidal symptoms were assessed after taking antipsychotics by applying extrapyramidal side effects scale (McEvoy SP, et. al, 1991), Barnes

Akathisia scale (Barnes TRE, 1989) and abnormal involuntary movement scale (Guy W, 1976) at a interval of 1 week, 1 month, 3 month, 6 month, 9 month and 1 year.

OBSERVATION AND DISUSSION

TABLE -1
GENERAL CHARACTERISTICS OF STUDY SUBJECTS

General Characteristics (N=40)	Group - A (N=40)	Group - B
Age	20 - 60 years	20 - 60 years
Sex	Male	15(37.5%)
	Female	25 (62.5%)
Economic Status	Upper	14(35%)
	Middle	6(15%)
	Lower	20(50%)
Educational Status	Low	24 (60%)
	Middle	6 (15%)
	High	10 (25%)
Occupational Status	Low	18 (45%)
	Middle	12 (30%)
	High	10 (25%)
Marital Status	Married	6 (15%)
	Unmarried	18(45%)
	Divorcee/ Separated / Widow	16 (40%)
Domicile	Urban	15 (37.5%)
	Rural	25 (62.5%)

Table 1 showed the general characteristic of study subjects. Two groups such as Group A and B were taken. Group A (N=40) received typical antipsychotics and Group B received atypical antipsychotics, within the age of 20 to 60 years

Therefore from the above table it has been observed that both groups were comparable in every respect (i.e. age, sex, marital status etc.).

TABLE - 2
MMSE SCORES OF STUDY SUBJECTS

Antipsychotic agents	Score < 25	Score > 25	Total
Typical	16(40%)	24(60%)	40
Atypical	5 (12.5%)	35 (87.5%)	40

After 1 year of treatment

MMSE → Minimental Status Examination

Score < 25 → Patients with cognitive impairment

Score > 25 → Healthy patients

$\chi^2 = 7.8$ df = 1 P < 0.01, statistically significant.

Table No. 2 revealed the cognitive status of study subjects after 1 year of treatment with either typical or atypical antipsychotics. It was observed that at the end of 1 year treatment 40% of the study subjects receiving typical antipsychotics were having cognitive deficit as com-

pared to 12.5%, receiving atypical antipsychotics. The difference observed was found to be statistically significant ($p < 0.01$). The cognitive deficit is comparatively more marked in the group of patients receiving typical antipsychotics. It may be inferred that long term use of antipsychotics have more side effects (cognitive deficits) than that of short term use.

TABLE -5
SCORES ON EXTRA-PYRAMIDAL SIDE EFFECTS SCALE OF STUDY SUBJECTS

Items	B.S	1 year											
		1 week	1 month	3 months	6 months	1 year	TA	AT	TA	AT	TA	AT	
A) Bradykinesia & rigidity	0	13	3	11	2	7	5	0	0	0	0	0	0
B) Observed rigidity	0	12	4	10	2	8	5	0	0	0	0	0	0
C) Gait & posture	0	10	3	9	2	7	4	0	0	0	0	0	0
D) Reported Tremor	0	10	2	13	4	20	6	0	0	0	0	0	0
E) Observed Tremor	0												

B.S = Baseline

TA = Typical antipsychotic

AT = Atypical antipsychotic

Table-5 showed the scores of study subjects on extra-pyramidal side effects scale from 1 week to 1 year of treatment with typical and atypical antipsychotics.

Since the scale on Extra pyramidal side effects does not have cut off point as a whole, in order to explain the validity of the study, the scores of the different items have been taken separately and the observations have been correlated with the studies earlier done in this area.

It is revealed that Bradykinesia-rigidity, observed rigidity, gait and posture, observed tremor and reported tremor, components of extrapyramidal side effects scale scores are more in patients on typical than atypical antipsychotics during the course of treatments.

Our observation in the area of extra pyramidal side effects between typical and atypical antipsychotics can be compared with the study of Peacock L, et al. (1996, Mar) that Parkinsonian signs were seen in 33% of clozapine patients versus 61% of control patients, mainly as hypokinesia ; tremor in 3% versus 11% and rigidity in 0 versus 19%

TABLE -5A1
BRADYKINESIA-RIGIDITY SCORES ON EXTRAPYRAMIDAL SIDE EFFECTS SCALE OF STUDY SUBJECTS *

Antipsychotic agents	Present	Absent	Total
Typical	11(27.5%)	29 (72.5%)	40
Atypical	2 (5%)	38 (95%)	40

After 1 month of treatment

$\chi^2 = 7.4$ df = 1 P < 0.01, statistically significant.

It showed that 11(27.5%) of study subjects receiving typical antipsychotics have more bradykinesia-rigidity scores on EPSE than 2(5%) receiving atypical antipsychotics.

**TABLE - 5 B1
OBSERVED-RIGIDITY SCORES ON EXTRAPYRAMIDAL SIDE EFFECTS SCALE OF STUDY SUBJECTS ***

Antipsychotic Total agents	Present	Absent	Total
Typical	10 (25%)	30(75%)	40
Atypical	2 (5%)	38 (95%)	40

* After 1 month of treatment

$\chi^2 = 6.27$ P < 0.05, statistically significant.

It was revealed that the observed rigidity scores on EPSE were more in patients receiving typical antipsychotics 10 (25%) than atypical antipsychotics 2 (5%).

**TABLE- 5 C1
GAIT AND POSTURE SCORES ON EXTRAPYRAMIDAL SIDE EFFECTS SCALE OF STUDY SUBJECTS ***

Antipsychotic Total agents	Present	Absent	Total
Typical	9 (22.5%)	31(77.5%)	40
Atypical	2 (5%)	38 (95%)	40

* After 1 month of treatment

$\chi^2 = 5.16$ df= 1 P < 0.05, statistically significant.

It was observed that the gait & posture scores on EPSE scale of study subjects are more in typical antipsychotics 9(22.5%) than atypical antipsychotics 2(5%).

**TABLE - 5 D1
REPORTED TREMOR SCORES ON EXTRAPYRAMIDAL SIDE EFFECTS SCALE OF STUDY SUBJECTS ***

Antipsychotic agents	Present	Absent	Total
Typical	20(50%)	20 (50%)	40
Atypical	5 (12.5%)	35 (87.5%)	40

* After 3 months of treatment

$\chi^2 = 13.0$ df=1

It was revealed from the above table that reported tremor were more in study subjects taking typical antipsychotics 20 (50%) than atypical one 5 (12.5%).

**TABLE - 5 E1
OBSERVED TREMOR SCORES ON EXTRAPYRAMIDAL SIDE EFFECTS SCALE OF STUDY SUBJECTS**

Antipsychotic agents	Present	Absent	Total
Typical	18 (45%)	22(55%)	40
Atypical	4 (10%)	36 (90%)	40

* After 3 months of treatment

$\chi^2 = 12.2$ df=1 P < 0.01, statistically significant.

It was revealed from the above table that the observed tremor scores on EPSE scale of study subjects are more in typical 18 (45%) than atypical antipsychotic agents 4 (10%).

**TABLE-6
SCORES ON BARNES AKATHISIA RATING SCALE (BARS) OF STUDY SUBJECTS**

Items	B.S.	1 week		1 month		3 months		6 months	
		TA	AT	TA	AT	TA	AT	TA	AT
A) Objective	0	15	2	19	6	0	0	0	0
B) Subjective	0	10	3	20	5	0	0	0	0
C) Global	0	13	3	16	4	0	0	0	0

B.S →Baseline

TA →Typical antipsychotic AT →Atypical antipsychotic

Table - 6 showed the scores of study subjects on Barnes Akathisia Rating scale from 1 week to 6 months of treatment with typical and atypical antipsychotics.

Since the scale on Akathisia does not have cut off point as a whole, in order to explain the validity of the study, the scores of the different items have been taken separately and the observations have been correlated with the studies earlier done in this area.

**TABLE - 6 A1
OBJECTIVE SCORES ON BARNES AKATHISIA RATING SCALE OF STUDY SUBJECTS ***

Antipsychotic agents	Present	Absent	Total
Typical	19 (47.5%)	21 (52.5%)	40
Atypical	6 (15%)	34 (85%)	40

* After 1 month of treatment

$\chi^2 = 9.83$ df=1 P < 0.01, statistically significant.

It was revealed that objective scores on BARS of study subjects were more in taking typical antipsychot-

ics 19 (47.5%) that atypical antipsychotics 6 (15%).

TABLE - 6 B1
SUBJECTIVE SCORES ON BARNES AKATHISIA RATING SCALE OF STUDY SUBJECTS *

Antipsychotic agents	Present	Absent	Total
Typical			
	20(50%)	20 (50%)	40
Atypical			
	5 (12.5%)	35 (87.5%)	40

P < 0.01, statistically significant.

It was observed from the above table that subjective scores on BARS of study subjects more in using typical antipsychotics 20 (50%) that atypical antipsychotics 5 (12.5%).

TABLE-6 C1
GLOBAL SCORES ON BARNES AKATHISIA RATING SCALE OF STUDY SUBJECTS *

Antipsychotic Total agents	Present	Absent	Total
Typical 40	16(40%)	24 (60%)	
Atypical 40	4 (10%)	36 (90%)	

After 1 month of treatment

$\chi^2 = 9.6$ df = 1 P<0.01, statistically significant.

It was observed from above table that Global scores on BARS more in typical 16 (40%) than atypical antipsychotic agents 4 (10%).

TABLE - 7
SCORES ON ABNORMAL INVOLUNTARY MOVEMENT SCALE (AIMS) OF STUDY SUBJECTS

Items	B.S	1 Week		1 Month		3 Months		6 Months		9 Months		1 Year	
		TA	AT	TA	AT	TA	AT	TA	AT	TA	AT	TA	AT
A. Facial and oral movements	0	0	0	0	0	3	0	10	3	11	2	13	4
B. Extremity movements	0	0	0	0	0	3	0	8	2	6	1	12	4
C. Trunk movements	0	0	0	0	0	0	0	10	3	8	2	13	4
D. Global movements	0	0	0	0	0	0	0	9	2	9	2	12	3
E. Patient's Awareness Abnormal movements	0	0	0	0	0	4	2	13	3	11	2	15	4
F. Dental status	0	0	0	0	0	0	0	0	0	9	2	11	1

B.S→Base line

TA →Typical Antipsychotics

AT→Atypical Antipsychotics

Table - 7 showed the scores on AIMS of study subjects from 1 week to 1 year of treatment with typical and atypical antipsychotics.

Since the scale on Abnormal involuntary movements does not have cut off point as a whole, in order to explain the validity of the study, the scores of the different items have been taken separately and the observations have been correlated with the studies earlier done in this area.

TABLE-7A1
SCORES OF FACIAL AND ORAL MOVEMENTS ON AIMS OF STUDY SUBJECTS

Antipsychotic agents	Present	Absent	Total
Typical	13 (32.5%)	27 (67.5%)	40
Atypical			

* After 1 year of treatment

$\chi^2 = 6.05$ df =1 P < 0.05, statistically significant.

The difference between the two groups is significant in 95% of cases. That means facial and oral movement is present in 32.5% of cases after typical antipsychotic treatment and only 10% of cases after atypical antipsychotic treatment. Hence it can be envisaged that atypical antipsychotic treatment gives lesser side effect (facial and oral movements) than that of typical antipsychotic treatment.

TABLE-7 B1
SCORES OF EXTREMITY MOVEMENTS ON AIMS OF STUDY SUBJECTS*

Antipsychotic agents	Present	Absent	Total
Typical	12 (30%)	28 (70%)	40
Atypical	4 (10%)	36 (90%)	40

P < 0.05, statistically significant.

It was observed that the difference between the extremity movement of the study subjects with typical and atypical antipsychotic treatment was significant, i.e. with atypical antipsychotic treatment only 10% of patients were having extremity movement whereas 30% of patients were having extremity movement after typical antipsychotic treatment. That means atypical can be more safely used than typical antipsychotics in case of extremity movements adverse effects.

TABLE - 7 C1
SCORES OF TRUNK MOVEMENTS ON AIMS OF STUDY SUBJECTS*

Antipsychotic agents	Present	Absent	Total
Typical	13 (32.5%)	27 (67.5%)	40
Atypical			

* After 1 year of treatment

$\chi^2 = 6.05$

It can be concluded that the problem of trunk movement is more marked with the patients receiving typical antipsychotics (32.5%) than patients receiving atypicals (10%).

TABLE-7D1
SCORES OF GLOBAL MOVEMENTS ON AIMS OF STUDY SUBJECTS*

Antipsychotic agents	Present	Absent	Total
Typical	12 (30%)	28(70%)	40
Atypical			

* After 1 year of treatment

$\chi^2 = 6.646$ $df = 1$ $P < 0.01$, statistically significant.

It seems from the table that global movement results more in case of patients taking typical antipsychotics 30% as compared to patients taking atypical 7.5%. Hence, atypical antipsychotic treatment gives lesser side effect on global movement.

TABLE - 7E1
PATIENTS AWARENESS OF ABNORMAL MOVEMENTS ON AIMS OF STUDY SUBJECTS *

Antipsychotic agents	Present	Absent	Total
Typical	15 (37.5%)	25 (62.5%)	40
Atypical			

* After 1 year of treatment

$\chi^2 = 8-35$ $df=1$ $P < 0.01$, statistically significant.

On patient awareness of abnormal movements 37.5% of study subject taking typical antipsychotic treatment scored more than 10% of study subject taking atypical antipsychotic treatment.

TABLE - 7 F1 SCORES OF DENTAL STATUS ON AIMS OF STUDY SUBJECTS*

Antipsychotic agents	Present	Absent	Total
Typical	11 (27.5%)	29 (72.5%)	40
Atypical	1(2.5%)	39 (97.5%)	40

* After 1 year of treatment

$\chi^2 = 9.8$ $df=1$ $P < 0.01$, statistically significant.

Results showed that in 99% of cases atypical antipsychotics treatment causes lesser dental problem than typical use. Because 27.5% were having dental problem with typical antipsychotic treatment and only 2.5% were having that with atypical antipsychotic treatment. Here we have taken the comparison between 9 months and 1 year because dental problems occur after 6 months of antipsychotic treatment.

CONCLUSIONS & SUMMARY

1. The Cognitive deficit is comparatively more marked in the group of patients receiving typical antipsychotics.
2. Subjects were subjected to MMSE scores 1 year after antipsychotic treatment and it is inferred that longer the duration of treatment with antipsychotics , more the cognitive deficits .
3. Based on Extrapyramidal side effects scale that of Bradykinesia –rigidity,observed rigidity, gait and posture, reported tremor, observed tremor, BARS,AIMS scores are more in patients receiving typical antipsychotics than atypical antipsychotics.
4. It was concluded that EPS are more in patients receiving typical antipsychotics than atypical antipsychotics.
5. Based on this study it was concluded that cognitive deficits and extrapyramidal symptoms are more in patients receiving typical antipsychotics than atypical antipsychotics.

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