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Original Research Article

Extra pyramidal symptoms between patients consuming typical and atypical anti-psychotics-in tertiary care centre, in eastern India

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Abstract
Introduction: *The introduction of second-generation antipsychotics, with atypical mechanism of action, especially lower dopamine receptors affinity, has met with great expectations among clinicians regarding their potentially lower propensity to cause extrapyramidal syndrome. Numerous studies have examined the incidence and severity of extrapyramidal syndrome with first- and second-generation antipsychotics.*
Material and Methods: *100 patients with any psychotic symptoms were taken up in this study. Extra pyramidal symptoms were assessed after taking antipsychotics by applying by –extra-pyramidal side effects scale, Barnes akathisia scale and abnormal involuntary moments scale at the interval of 1 week,2 months, 3 months, 6 months, 9 months & 1 year.*
Results: *At the end of 1 year treatment 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*
Interpretation and Conclusion: *EPS are more in patients receiving typical antipsychotics than atypical antipsychotics.*
Keywords: *Anti-Psychotics,extra pyramidal symptoms, comparison.*

Introduction

Antipsychotics are used to treat psychosis as well as many other related disorders. Significant adverse effects associated with conventional (typical) antipsychotics and availability of the alternatives, better tolerated medications in other classes like new atypical antipsychotics with their improved adverse effect profiles may make this practice more acceptable.

However, compared to older medications the atypical agents are chemically and pharmacologically different, have fewer side effects and hold the promises of greater clinical efficacy.

Typical antipsychotic block D_2 receptor so tightly and persistently that they cause antipsychotics actions and side effects like E.P.S (extra pyramidal side effects) as compare to a typical one.

In PET study approximately 65% occupation of D_2 is the group threshold required for resolution of psychotic symptoms. 80 % occupancy of D_2 for onset of motor side effects in typical antipsychotics.

As compared to typical antipsychotics atypical one produce less E.P.S &cognitive deficits, is the basic theme of my study.In sum cognitive deficiency mainly reflects the idea of disorganizations inperception, thought and emotion. Whereas EPS mainly involves Akathisia, Acute Dystonia, Parkinsonism, Perioral Tremor, N.M.S.&T.D.

Aims & Objective

The study aim to assess and compare extra-pyramidal symptoms between the patients taking typical and atypical antipsychotics duration wise.

Material and Methods

1. The study was conducted in the O.P.D & I.P.D Dept. of Psychiatry, Mental health institute, centre of excellence, SCB Medical College Cuttack, Odisha, India
2. The patients diagnosed with –Schizophrenia, Schizoaffective Disorder, Schizophreniform Disorder, Delusional Disorder, Affective Psychosis, other psychosis, as criteria led down in DSM-V, were taken up for the study.
3. The age group between 20 to 60 yr were taken up for the study
4. Both sexes were included
5. Exclusion were done those patients receiving mood stabilizers with anti psychotics, ECT, above 60 yrs patients to rule out organicity, ISOL, substance induced psychosis & irregular patients
6. 100 patients with any psychotics symptoms were taken up
7. All patients gave written informed consents to participate the study
8. 8 patients denied to participate, 10 patients irregularly irregular and 2 patients left without informed. So 80 patents were participate finally.
9. Chloropramazine therapeutic dose equivalents as per (APA.1997) guidelines.
10. At the beginning of the study socio-demographic data were recorded.
11. 40 patients taking typical anti-psychotics and another 40 patients taken anti-psychotics medication
12. Extra pyramidal symtoms were assessed after taking antipsychotics by applying by –extra-pyramidal side effects scale (McEvoy et. al.1991), barnesakathesia scale (Barnes.1989) and abnormal involuntary moments scale at the interval of 1 week,2 months, 3 months, 6 months, 9 months & 1 year.

Statistic Analysis were done from observation by using the formula chi-square (2 x 2 fold). In this research the comparison is made between the groups to know whether they are comparable or not.

Observation & Discussing

Table-1 Score of Extra-Pyramidal side effects scale of Study Subjects

Items	B.S	1 week		1 month		3 month		6 month		1 year	
		TA	AT	TA	AT	TA	AT	TA	AT	TA	AT
A)Bradykynesia & rigidity	0	13 32.5	3	11	2	7	5	0	0	0	0
B) Observed rigidity	0	12	4	10	2	8	5	0	0	0	0
C) Gait & posture	0	10	3	9	2	7	4	0	0	0	0
D) Reported Tremor	0	10	2	13	4	20	5	0	0	0	0
E) Observed Tremor	0	11	3	12	4	18	4	0	0	0	0

B.S-Baseline TA-Typical antipsychotics (40 patients) AT- Atypical antipsychotics (40 patients)

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 extra-pyramidal side effects scale scores are more in patients on typical than atypical antipsychotics during the course of treatments.

This is keeping in view with the study of Glazer WM (2000) that most frequent problems associated with the older generation of antipsychotic agents have extra pyramidal side effects and tardive dyskinesia. this can also be compared with the study of Mullen J.et al.(2000) that Quetiapine is as effective as risperidone for the treatment of psychotic symptoms, is more effective for depressive symptoms, may have more favourable EPS profile and has comparable over all tolerability.

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%.

Bradykinesia-Rigidity Scores on EPS Scale of Study Subjects

A) After 1 **WEEK** of treatment

$\chi 2 = 7.81$ df = 1

P < 0.01, statistically significant.

It was observed that at the end of 1 week treatment 13(32.5%) of study subject receiving typical antipsychotics scored more in Bradykinesia- rigidity of EPSE as compared to 3(7.5%)receiving atypical antipsychotics.

B) After 1 **MONTH** of treatment

$\chi 2 = 7.4$ df = 1

P < 0.01, statistically significant.

It was observed that at the end of 1 month treatment 11(27.5%) of study subject receiving typical antipsychotics scored more in Bradykinesia- rigidity of EPSE as compared to 2(5%)receiving atypical antipsychotics

Observed -Rigidity Scores on EPS Scale of Study Subjects

A) After 1 **WEEK**of treatment

$\chi 2 = 5$ df = 1

P < 0.05, statistically significant.

It was observed that observed –rigidity score on EPSE were more in study subjects receiving typical antipsychotics 12(30%) than atypicals 4 (10%).

B) After 1 **MONTH** of treatment

$\chi 2 = 6.27$ df = 1

P < 0.05, statistically significant.

It was observed that observed –rigidity score on EPSE were more in study subjects receiving typical antipsychotics 10(25%) than atypicals2 (5%).

Gait & Posture Scores on EPS Scale of Study Subjects

A) After 1 **WEEK** of treatment

$\chi 2 = 4.5$ df = 1

P < 0.05, statistically significant.

It was observed that score ongait & posture scores on EPSE were more in study subjects receiving typical antipsychotics 10(25%) than atypicals 3 (7.5%).

B) After 1 **MONTH** of treatment

$\chi 2 = 5.16$ df = 1

P < 0.05, statistically significant

It was observed that score on gait & posture scores on EPSE were more in study subjects receiving typical antipsychotics 9(22.5%) than atypicals 2 (5%).

Reported Tremor Scores on EPS Scale of Study Subjects

A) After 1 **WEEK** of treatment

$\chi 2 = 6.27$ df = 1

P < 0.05, statistically significant.

Out of the subjects taking typical antipsychotics 10(25%) were having reported tremor, then that of atypical having 2(5%). So it was clearly marked that typical antipsychotic agents have more reported tremor than atypical antipsychotics.

B) After 3 **MONTHS** of treatment

$\chi 2 = 13.0$ df = 1

P < 0.01, statistically significant

Out of the subjects taking typical antipsychotics 20(50%) were having reported tremor, then that of atypical having 5(12.5%). So it was clearly marked that typical antipsychotic agents have more reported tremor than atypical antipsychotics.

Observed Tremor Scores on EPS Scale of Study Subjects

A) After 1 **WEEK** of treatment

$\chi 2 = 5.5$ df = 1

P < 0.05, statistically significant.

It was concluded that on EPSE scale were more of study subjects taking typical antipsychotics 11(27.5%) than atypical antipsychotics agents 3(7.5%)

B) After 3 **MONTHS** of treatment

$\chi 2 = 12.2$ df = 1

P < 0.01, statistically significant

It was concluded that on EPSE scale were more of study subjects taking typical antipsychotics 18(45.5%) than atypical antipsychotics agents 4(10%)

Table-2 Scores on Barnes Akathisia Trating Scale (Bars) of Study Subjects

Items	B.S	1 week		1 month		3 month		6 month	
		TA	AT	TA	AT	TA	AT	TA	AT
A)Ojective	0	15 32.5	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 antipsychotics (40 patients) AT- Atypical antipsychotics (40 patients)

Since the scale on akathisiadoes 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 was observed that akathisia scores (Objective, Subjective and Global) of study subjects on BARS are more on typical antipsychotics. Akathisia appeared within 1 week but it was aggravated within four weeks (1 month)

This is keeping in view of our observation in the area of akathisia between typical and atypical antipsychotics can be compared with the study of seeman P(2003) that the prevalence of akathisia associated with atypical antipsychotics including risperidone and olanzapine, is can also be compared with the study of Peacock L (1996) that psychic Akathisia was found in 14% versus 40% and motor Akathisia in 7% versus 29% of the patients, all differences significantly in favour of clozapine to typical antipsychotics .

Objectives Scores on Barnes Akathisia Rating Scale (Bars) of Study Subjects

A) After 1 **WEEK** of treatment

$\chi 2 = 12.6$ df = 1

P < 0.01, statistically significant.

It was observed that the objective scores on BARS of study subjects were more in taking typical antipsychotics 15 (37.5%) that atypical antipsychotic agents 2 (5%)

B) After 1**MONTH** of treatment

$\chi 2 = 9.83$ df = 1

P < 0.01, statistically significant

It was observed that the objective scores on BARS of study subjects were more in taking typical antipsychotics 19 (47.5%) that atypical antipsychotic agents 6(15%)

Subjectives Scores on Barnes Akathisia Rating Scale (Bars) of Study Subjects

A) After 1 **WEEK**of treatment

$\chi 2 = 4.5$ df = 1

P < 0.05, statistically significant.

It was observed that the subjective scores on BARS of study subjects were more in taking

typical antipsychotics 10 (25%) that atypical antipsychotic agents 3(7.5%)

B) After 1 **MONTH** of treatment

$\chi 2 = 13.0$ df = 1

P < 0.01, statistically significant

It was observed that the subjective scores on BARS of study subjects were more in taking typical antipsychotics 20 (50%) that atypical antipsychotic agents 5(12.5%)

Global Scores on Barnes Akathisia Rating Scale (Bars) of Study Subjects

A) After 1 **WEEK** of treatment

$\chi 2 = 7.81$ df = 1

P < 0.01, statistically significant.

It was observed that the global scores on BARS of study subjects were more in taking typical antipsychotics 13 (32.5%) that atypical antipsychotic agents 3(7.5%)

B) After 1**MONTH** of treatment

$\chi 2 = 9.6$ df = 1

P < 0.01, statistically significant

It was observed that the global scores on BARS of study subjects were more in taking typical antipsychotics 16 (40%) that atypical antipsychotic agents 4(10%)

Table-3 Scores on Abnormal Involuntary Movement Scale (Aims) of Study Subjects

Items		B.S	1 Week		1 Month		3 Month		6 Month		9 Month		1 Year	
			TA	AT	TA	AT	TA	AT	TA	AT	TA	AT	TA	AT
A)Facial & oral movements	P	0	0	0	0	0	3	0	10	3	11	2	13	4
	A	40	40	40	40	40	37	40	30	37	29	38	27	36
B)Extremity movement	P	0	0	0	0	0	3	0	8	2	6	1	12	4
	A	40	40	40	40	40	37	40	32	38	34	39	28	36
c)Trunk movement	P	0	0	0	0	0	0	0	10	3	8	2	13	4
	A	40	40	40	40	40	40	40	30	37	32	38	27	36
D) Global movement	P	0	0	0	0	0	0	0	9	2	9	2	12	3
	A	40	40	40	40	40	40	40	31	38	31	38	28	37
E)Patients awareness of abnormal movements	P	0	0	0	0	0	4	2	13	3	11	2	15	4
	A	40	40	40	40	40	36	38	27	37	29	38	25	36
F)Dental status	P	0	0	0	0	0	0	0	0	0	9	2	11	1
	A	40	40	40	40	40	40	40	40	40	31	38	29	39

B.S->Baseline TA->Typical antipsychotics (40 patients) AT-> Atypical antipsychotics (40 patients)
P->Present A->Absent

The scores on AIMS of study subjects from 1 week to 1 year of treatment typical & 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.

This is keeping with our observation in abnormal involuntary movements between typical & atypical antipsychotics can be compared with the study of Madhu Soodans et al.(1995) that by the use of atypical (Risperidone) antupsychotics, reduces both positive and negative symptoms of schizophrenia and lack of significant EPS, tardive antipsychotics.

Scores of Facial & Oral Movements on Aims of Study Subjects

A) After 6 months of treatment

$\chi 2 = 4.5$ df = 1

P < 0.05, statistically significant.

It was observed that patients taking typical antipsychotics scored more 10(25%) than the patients taking atypical antipsychotics

B) After 1 year of treatment

$\chi 2 = 6.05$ df= 1

P < 0.05, statistically significant

That means facial and oral movement is present in 13(32.5%) of cases after typical antipsychotics

treatment and only 4 (10%) of cases after atypical antipsychotics treatment.

Scores of Extrimity Movements on aims of Study Subjects

A) After 6 months of treatment

$\chi 2 = 4.114$ df = 1

P < 0.05, statistically significant

It seems that extremity movement is present with 8(20%) of study subjects after 6 months of typical antipsychotics treatment and only 2(5%) of the study subjects after 6 months atypical antipsychotics treatment. Though the score is high after typical antipsychotics treatment it can be concluded that atypical use gives fewer side effect (extremity movement).

B) After 1 year of treatment

$\chi 2 = 5.00$ df = 1

P < 0.05, statistically significant

It was observed that the differences between the extremity movement of the study subjects with typical and atypical antipsychotics treatment were significant. i.e. with typical antipsychotics treatment only 4 (10%) of patients were having extremity movement whereas 12(30%) of patients were having extremity movement after typical antipsychotics treatment. That means atypical can be more safely used than typical antipsychotics in cases of extremity movements adverse effects.

Scores of Trunk Movements on Aims of Study Subjects

A) After 6 months of treatment

$\chi 2 = 4.5$ df = 1

P < 0.05, statistically significant.

It was observed that at the end of 6 months of treatment 10(25%) of subjects receiving typical antipsychotics scored on trunk movement (on AIMS) as compared to 3 (7.5%) receiving atypical antipsychotics.

B) After 1 year of treatment

$\chi 2 = 6.05$ df = 1

P < 0.05, statistically significant

It can be concluded that the problem of trunk movement is more marked with the patients receiving typical antipsychotics 13(32.5%) than patients receiving atypical 4(10%).

Scores of Global Movements on Aims of Study Subjects

A) After 6 months of treatment

$\chi 2 = 5.164$ df = 1

P < 0.05, statistically significant.

Out of the subjects takings typical antipsychotics 9(22.5%) were having global movement. Whereas only 2(5%) taking atypical were having that. It was clearly noticed that global movement were more occurred in patients taking typical antipsychotics.

B) 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 12(30%) as compared to patients taking atypical 3(7.5%). hence atypical antipsychotics treatment gives lesser side effects on global movement.

Patients Awareness of Abnormal Movements on aims of Study Subjects

A) After 6 months of treatment

$\chi 2 = 7.81$ df = 1

P < 0.01, statistically significant

The results showed that there is a significant difference between patients taking typical and atypical antipsychotics on patient awerness of abnormal movements (on AIMS). i.e 13(32.5%) patients typical antipsychotics were having awerness of abnormal movements as compared to atypical i.e. 3(7.5%).

B) After 1 year of treatment

$\chi 2 = 8.35$ df = 1

P < 0.01, statistically significant

It on patient awerness of abnormal movement 15(37.5%) of study subjects taking typical antipsychotics treatment scored more than 4(10%) of study subjects taking atypical antipsychotics treatment.

Scores of Dental Status on aims of Study Subjects

A) After 9 months of treatment

$\chi 2 = 5.16$ df = 1

P < 0.05, statistically significant.

From the result it is clear that in 95% of cases we can assesss the view as typical antipsychotic treatment causes more dental problems than atypical antipsychotics treatment. Because 22.5% of subjects taking typical antipsychotic were having dental problem whereas only 5 % taking atypical were having that.

B) 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 with typical antipsychotics treatment and only 2.5% were having that with atypical antipsychotics treatment. Hence we have taken the comparison between 9 months and 1 year because dental problems occur after 6 months of antipsychotics treatment.

It on patient awerness of abnormal movement 15(37.5%) of study subjects taking typical antipsychotics treatment scored more than 4(10%) of study subjects taking atypical antipsychotics treatment.

Conclusion

1) The new atypical antipsychotics medications represent a major step forward in the treatment of schizophrenia and other psychotic disorders than the typical antipsychotics.
2) The advantage of atypical antipsychotics is their lesser side effect profiles, particularly with regard to EPS and cognitive deficit.
3) Loose binding and medium binding to the D2 receptor have less extra-pyramidal side effects(both acute and chronic) as compared to tight-binding antipsychotics.
4) Long-term use of antipsychotics give more side effects i.e. Extra Pyramidal Side efects than the short term use.
5) Low education sometimes becomes a bar for the treatment procedure.
6) Further refinement of our understanding of the clinical utility of these drugs awaits their widespread use in mainstream clinical setting and further controlled studies comparing them to one another.

Conflict of Study: Nil
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Study of Interest: Research (Academic)

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