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APPRAISAL OF EFFICACY AND TOLERABILITY OF ANTIPSYCHOTIC DRUGS IN TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: To evaluate efficacy and tolerability of antipsychotic drugs in tertiary care hospital. **Methodology:** This is a hospital-based prospective observational study conducted in the inpatient and outpatient psychiatry departments over 6 months with patients who met the inclusion criteria. The patients have been prescribed Olanzapine, Risperidone, Aripiprazole, and Haloperidol. The symptoms of the patients were assessed by using the Positive and Negative Syndrome Scale (PANSS). To estimate the severity of illness Clinical Global Impression Scale for Severity of Illness is used. The improvement of the condition is evaluated by Clinical Global Impression-Improvement Scale. **Results:** A total of 105 patients were included in the study. Among them, females and males are equally affected the average age of the subjects was 36.62 and 37.14. 29-39 age range of the people were most affected. There is a much reduction in the PANSS, CGI-S, and CGI-I mean and standard deviation from baseline follow-up after 2 months. **Conclusion:** The findings of the study revealed that people in rural areas, uneducated, unemployed, and divorced were higher in number. Among the four medications used by the patients, Haloperidol showed efficacy and tolerability among the 105 patients.

Keywords: Antipsychotics, Schizophrenia, Tolerability, Olanzapine

INTRODUCTION

Schizophrenia is a chronic brain condition that affects one percent of the population and often manifests in early adulthood. The scope of up-onset this disorder neuropathy has previously prevented mechanistic investigations from determining the disease exact etiology or whether the pathology found in postpartum studies is a result of the disease progression tic medications are the preferred form of treatment, but there is debate over the best course of action. Through changes in sickness intensity, list of side effects, and side effect severity this study tries to evaluate the effectiveness and tolerance of antipsychotics. Approximately 2% of the world's population suffers from schizophrenia, yet the exact causes of the disorder are still unknown [1]. Approximately 24 million individuals worldwide suffer from schizophrenia, according to the world health organization (WHO). There are 1.5 to 2.5 cases of this disease per 1000 people in India, accordance to prevalence studies. There is no consistent difference in the frequency of illness between rural and urban locations, nor is there any evidence of either a high or low incidence. The annual incidence of this ailment is 0.35 to 0.38 per 1000 in urban areas and 0.444 per 1000 in rural areas [3]. In

India, where there were around 1 billion people, there are reportedly 4 million persons with schizophrenia [2]. Schizophrenia's origin is uncertain, even though the disorder's data suggests a genetic foundation [4]. The degree of biological relatedness to an affected person is related to the probability of this ailment progressing. In comparison to second-degree relatives, the first-degree relatives of the ill person are at significantly higher risk of developing the illness; the risk is lower for dizygotic twins than for monozygotic twins. The primary inquiry in the treatment of schizophrenia is this hypothesis. The first version of this clearly emphasized the importance of excessive dopamine, but later it evolved into a theory involving both striatal and hyperdopaminergic. The most prevalent and important excitatory neurotransmitter is glutamate. In schizophrenia, glutamatergic circuits that connect to the thalamus, brain, and limbic system are crucial. **S**tress-related serotonin excess from the DRN disrupts cortical neurons' normal functioning in schizophrenia. The dorsolateral frontal lobe (DLFL) and anterior cingulate cortex, in particular, may experience substantial stress-derived serotonergic burden, which may be a major factor in this illness [5]. Schizophrenia must be diagnosed based on the Diagnostic and Statistical Manual of Mental Disorder, Fifth Edition (DSM-5) symptoms, which must be patient-specific. If a patient exhibits two (or more) of the following active-phase symptoms for at least one month: delusions, hallucinations, disorganized (or catatonic) conduct, and negative symptoms, they are classified as having schizophrenia, according to DSM-5 criteria [6].

Schizophrenia is a serious illness marked by a malfunction in the perception of expression of reality, which hurts social and vocational functioning. As epidemiological research on schizophrenia is rare in India, the WHO estimates that schizophrenia affects about 24 million individuals worldwide [7]. Antipsychotic drugs are now always used as the first line of treatment for schizophrenia. Recent research has revealed that 25-50% of hospitalized psychiatric patients are taking multiple antipsychotic medications at once. Positive symptoms can be effectively treated with first and second-generation antipsychotics, while efficacy for Negative symptoms and cognitive impairment is still lacking. Although antipsychotic drugs are the most frequently given class of drugs for people with psychosis, there are not enough studies that show how effective, safe, and tolerable [8]. Schizophrenia is typically treated with antipsychotic medication, but there is debate over the best medication to use. We, therefore, set out to carry out a study on the effectiveness and tolerance of antipsychotics [9].

METHODOLOGY

Study site:

The study was carried out at Malla Reddy Narayan Multi-speciality Hospital, Hyderabad.

Study design:

A hospital-based prospective observational study was conducted out and in the patient's psychiatry department.

Study duration: 6 Months

Study criteria:

Inclusion criteria:

Patients of age 18-65 years were prescribed antipsychotics and adjunctive therapy for schizophrenia/psychosis.

Exclusion criteria:

Patients of age <18 and>65 years, patients with severe psychosis, renal and hepatic impairment, patients on immunosuppressant therapy, substance abuse, pregnant women, and lactating mothers.

Source of data:

By communicating with patients and their representatives, patient medical records (case and laboratory)

Study method:

Study approval from the Institutional Review Board (IRB) and the head of the hospital was obtained.

- The study protocol and data collection form were submitted for approval and the chief of the hospital provided oral consent.
- Patients who met research criteria were discovered through regular evaluation of patient records during the study period and documented in a predesigned data collection form after receiving clearance from the IRB.
- Patients and their representatives were contacted for the study done in the psychiatry inpatient and outpatient departments.
- Patient interviews and case records were filled out by physicians, nurses, pharmacists, and other healthcare professionals to obtain patient data.
- All information will be kept private. The information gathered was then placed into a Microsoft Excel database and analyzed further.
- During the data collection period, all approved schizophrenia patients who visited the hospital for their routine follow-up were included in this study.
- Patients were interviewed using a standard questionnaire to get information on socio- demographics, and medication adherence. During the follow-up phase, the patient's information was evaluated.
- The Positive and Negative Syndrome Scale (PANSS) was used to assess Positive symptoms, Negative symptoms, and General Psychopathological symptoms. We interviewed the patients regarding their symptoms using PANSS. It is a thirty-item containing scale that assesses a patient's psychotic symptoms.
- The Clinical Global Impression-Severity of Illness (CGI-S) is used to assess the severity of the condition. It is a seven-item scale with scores ranging from 0-7. It is given as 0=Not assessed,1=Normal, not at all ill,2=Borderline mentally ill,3=Mildly ill,4=Moderately ill,5=Markedly ill,6=Severely ill,7=Among the most extremely ill patients.
- The Clinical Global Impression-Improvement Scale (CGI-I) is used to assess the improvement of the patient's illness. It is a seven-item scale with scores ranging from 0-7. It is given as 0=Not assessed,1=Very much improved,2=Much improved,3=Minimally Improved,4=No change,5=Minimally worse,6=Much worse,7=Very much worse.

RESULTS

A total of 105 individuals were chosen for this research on the basis of study eligibility criteria.

Table-1: Demographic Profile of the Study Population

Category	Olanzapine	Risperidone	Aripiprazole	Haloperidol	Total
No of Participants	68	28	5	4	105
Male	33	16	2	2	53
Female	35	12	3	2	52

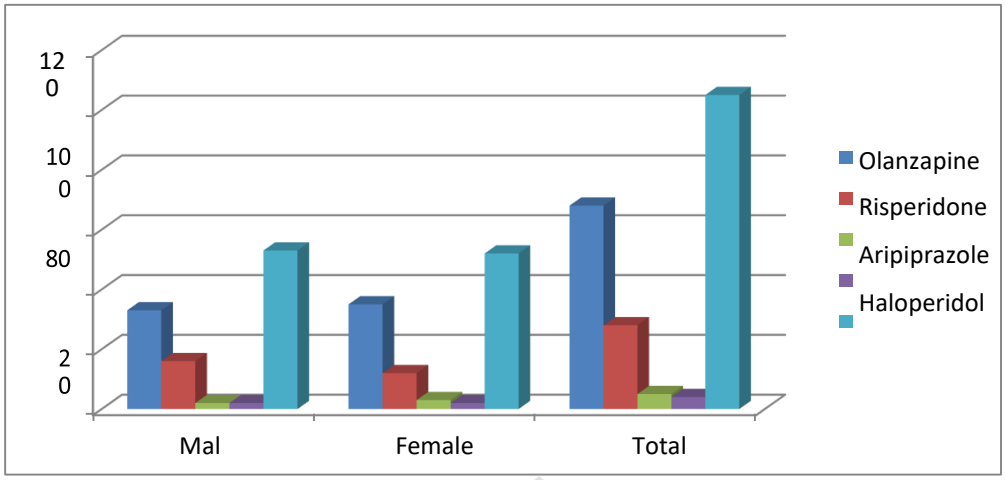

Fig: 1 Demographic profile of the study population

Table-2: Age-wise Data Distribution

Age Range (Years)	Olanzapine	Risperidone	Aripiprazole	Haloperidol
18-28	18	29	00	00
29-39	61	09	02	00
40-50	23	06	03	01
51-65	09	04	00	01

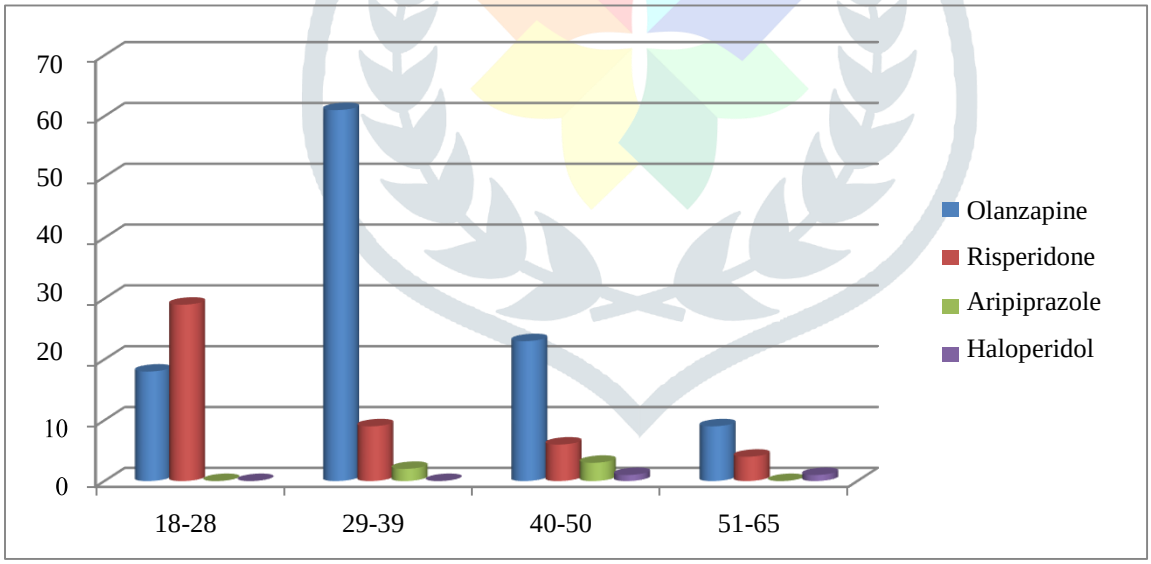

Fig: 2 Age-wise data distribution

Table-3: Changes in the Positive and Negative Syndrome Scale (PANSS) Score

PANSS	Olanzapine	Risperidone	Aripiprazole	Haloperidol
Baseline	80.01± 19.15	80.33± 19.49	79.90 ± 19.21	70.80± 13.60

Follow up after 2 months	62.64±15.48	62.90±15.79	62.71±15.43	15.32±12.76
Mean Difference	17.37±3.67	17.43±3.7	17.19±3.78	54.68±0.84

Table-4: Changes in Clinical Global Impression for Severity Of Illness (CGI-S) Score

CGI-S	Olanzapine	Risperidone	Aripiprazole	Haloperidol
Baseline	3.86±0.99	3.86±1.01	3.86±0.99	3.53±0.82
Follow up after 2 months	3.24±0.85	3.24±0.87	3.24±0.85	3.07±0.83
Mean Difference	0.62±0.14	0.62±0.14	0.62±0.14	0.46±0.01

Table-5: Changes in Clinical Global Impression for Improvement (CGI-I) Score

CGI-I	Olanzapine	Risperidone	Aripiprazole	Haloperidol
Follow up after 1 Month	3.57±0.55	3.57±0.55	3.57±0.55	3.73±0.44
Follow up after 2 Months	3.25±0.55	3.24±0.55	3.25±0.55	3.30±0.50
Mean Difference	0.32±0	0.33±0	0.32±0	0.43±0.06

Table-6: Individual Suspected Adverse Drug Reactions after 2 Months Follow Up

Adr	Olanzapine	Risperidone	Aripiprazole	Haloperidol
EPS	1	1	-	-
Orthostatic hypotension	26	16	3	2
Dry mouth	6	2	-	1
Urinary retention	-	-	-	-
Blurred vision	4	1	1	-
Constipation	3	2	-	-
Weight gain	27	8	1	-
Seizures	-	-	-	-
Sedation	67	28	4	4
Nausea	-	-	-	-
Vomiting	-	-	-	-
Pigmentation	-	-	-	-
Allergic reactions	-	-	-	-
Hypertension	1	-	-	-
Diabetes	-	-	-	-

Dyslipidemia	-	-	-	-
Galactorrhea	-	-	-	-
Amenorrhea	-	-	-	-

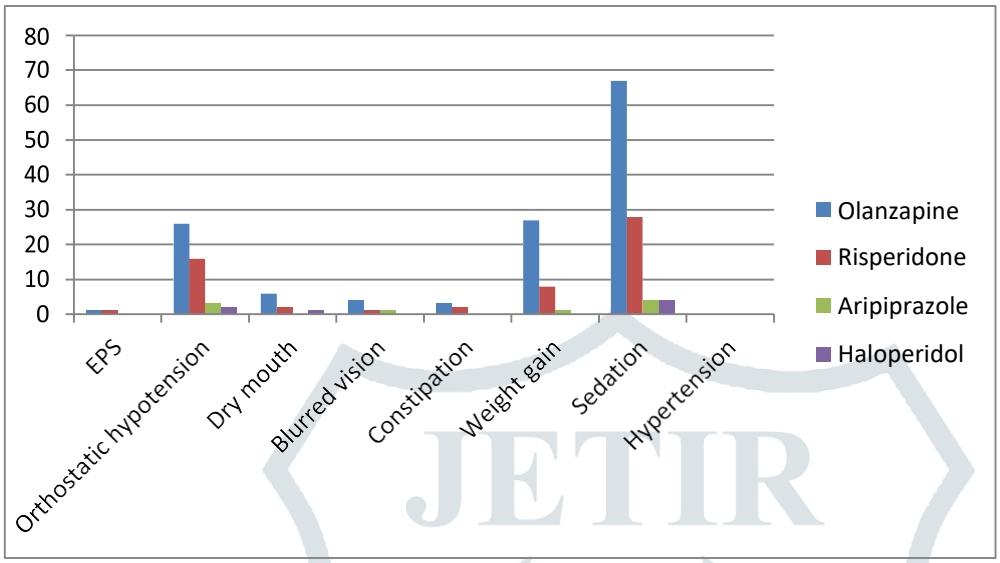

Fig: 3 Individuals suspected adverse drug reactions after 2 months of follow up

DISCUSSION

This prospective observational study compares three atypical antipsychotics with one typical antipsychotic agent to interpret the efficacy and tolerability of antipsychotics in schizophrenia. The subjects were recruited from the tertiary care hospital in Karimnagar. Here we estimated the overall efficacy and tolerability of Olanzapine, Risperidone, Aripiprazole, and Haloperidol in 105 subjects and followed up to 2 months, which also includes patients with non-compliance and patients who have suicidal thoughts.

The disease severity was assessed by Clinical Global Impression Scale for Severity of Illness (CGI-S). The decrease in the severity of the disease with Haloperidol then followed by Olanzapine, Risperidone, and Aripiprazole has an equal decrease in the severity of the condition. The mean difference of severity with Haloperidol was 0.46.

The present study evaluates the efficacy of Haloperidol against Risperidone in assessing the change in Positive and Negative Syndrome Score. Both drugs reduced the total score. Haloperidol-administered patients showed much decline in the total score compared to Risperidone after two months of follow-up.
A total of 105 patients of age 18-65 years were included in the study about the efficacy and tolerability of antipsychotics. Among 105 patients most of them were on Olanzapine then Risperidone followed by Aripiprazole and the least number of patients were on Haloperidol (68, 28, 5, 4).
The changes in the PANSS are depicted in table-3. The PANSS mean scores were declining over the treatment period in patients who are receiving four drugs. There is a decrease in baseline score 2 months after follow-up for those who are receiving the drugs i.e., patients who are on Olanzapine, Risperidone, Aripiprazole, and Haloperidol. The mean difference of baseline and follow-up after 2 months of Olanzapine, Risperidone, Aripiprazole, and Haloperidol was found to be 17.37±3.67, 17.43±3.7, 17.19±3.78 and 54.68±0.84. By comparing the four medications used in the patient Haloperidol has more efficacy than Risperidone followed by Olanzapine and Aripiprazole after a 2-month follow-up. The CGI-S score (table-4) declined over the treatment period of 2 months. In the case of four drugs, there is a significant difference from baseline to follow-up after 2 months in CGI-S score. The mean difference of baseline and follow-up after 2 months of Olanzapine, Risperidone, Aripiprazole, and Haloperidol was found to be 0.62±0.14, 0.62±0.14, 0.62±0.14 and 0.46±0.01. By comparing the four medications used by the patient Haloperidol decreased the severity of the condition in patients then followed by Olanzapine, Risperidone, and

Aripiprazole have an equal decrease in the severity score.

The CGI-I (table-5) declined over the treatment period of follow-up after 2 months. In the four drugs used by the patients, there is a valid difference from baseline to follow-up after 2 months in CGI-I score. The mean difference of baseline and follow-up after 2 months of Olanzapine, Risperidone, Aripiprazole, and Haloperidol was found to be 0.32±0, 0.33±0, 0.32±0 and 0.43±0.06. By comparing the above values depicted in the table we can analyze that Olanzapine and Aripiprazole show more improvement than Risperidone and followed by Haloperidol.

From table 6 we can assess that Olanzapine is more associated with orthostatic hypotension, weight gain, and sedation (26, 27, 67). Risperidone is more associated with orthostatic hypotension and sedation (16, 28). Aripiprazole is associated with orthostatic hypotension (4), blurred vision (1), sedation (1), and sedation (4), Whereas orthostatic hypotension (2), dry mouth (1), and sedation (4) is seen with Haloperidol. From the above table, we can conclude that Haloperidol has higher tolerability than Aripiprazole followed by Risperidone and Olanzapine in the follow-up after 2 months. Out of 105 follow-up patient's suicidal thoughts were experienced by 12 patients. Coming to adherence, in the 105 follow-up patients 2 patients were not adhering to the medication.

CONCLUSION

In our prospective observational study both males and females are equally affected by schizophrenia. Regarding age, the average age of the subjects was 36.62 and 37.14 for males and females respectively. In our observational study 29-39 years of age range patients were mostly affected by schizophrenia. In our results, both typical and atypical antipsychotics revealed the expected outcome when patients are on monotherapy with antipsychotic agents. According to our study Haloperidol has more efficacy in the 105 subjects in response to the treatment while Aripiprazole has allegedly less effective. In the present study patients showed greater tolerability towards Haloperidol with smaller differences followed by Aripiprazole and subsequently Risperidone and Olanzapine. At the end of the study constant thinking about their health, family issues, feeling loneliness, anxiety, and fearfulness provoked suicidal thoughts in the patients. The current study revealed that social habits (Alcoholics, tobacco chewing, toddy, gutka), unemployment, Conflicts with neighbors, land issues, rural areas, and adverse effects with antipsychotic medication have affected medication compliance and treatment outcome.

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