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Original Research Article

Averse Drug Effects of Atypical Antipsychotics in Schizophrenia Cases

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Abstract:

Introduction: Atypical antipsychotics are more preferable than typical antipsychotics due to their superior safety profile and lower likelihood of causing extrapyramidal side effects. The occurrence of adverse drug reactions from atypical antipsychotics has a detrimental effect on the overall quality of life and need specific care over the course of therapy. The current research aimed to evaluate the effectiveness of atypical antipsychotics and their influence on individuals with schizophrenia.

Material and Methods: We included a cohort of 120 individuals who were clinically diagnosed with schizophrenia and were between the ages of 21 and 35. The subjects were randomly separated into four groups based on the substance delivered. The treatment technique and side effect profile were recorded. The assessment of drug side effects was conducted using a standardised Antipsychotic Side-effects Evaluation Questionnaire. Follow-up was conducted on cases to assess the status of side effects at the first, third, sixth, ninth, and twelfth month.

Results: Weight gain was observed in 36.67% of cases in group AR, 33.33% in group AS, 63.33% in group OL and 26.66% in group ZI. Insomnia was the most prevalent adverse event of the central nervous system in all study groups, particularly in groups AS (33.33%), group AR (30%), group OL (26.67%), and group ZI (20%). Extrapyramidal symptoms were equally prevalent across all medication groups in the current investigation.

Conclusion: The results of the study did not indicate significant differences in the side effects linked to different antipsychotic drugs. Of all the research medications, aripiprazole, ziprasidone, and Asenapine showed the most effectiveness in reducing the negative symptoms of schizophrenia and minimising associated side effects.

Keywords: Atypical antipsychotics, Schizophrenia, Adverse effects, Central nervous system.

Introduction

Schizophrenia is a long-term mental illness that impairs a person's ability to function in daily life, at work, and social situations. Symptoms include disorganised speech, delusions, cognitive dysfunctions, hallucinations, and catatonic behaviours. It is impacting 1% of the world's population [1,2]. In 2016, an estimated 0.28% of the world's population suffered from schizophrenia, when adjusted for age. Schizophrenia is a major health concern worldwide, but it is more prevalent in developing nations like India due to factors such as population increase and ageing. When it comes to schizophrenia, antipsychotics are by far the most common and effective therapeutic options [3]. By blocking dopamine receptors postsynaptically, conventional or first-generation antipsychotics alleviate positive symptoms including delusions and hallucinations, which are hallmarks of psychotic disorder. One distinguishing feature of atypical or second-generation antipsychotics is their increased focus on serotonergic regulation [4]. The distinct patterns of adverse effects between the two groups may be explained by these characteristics. Several antipsychotic medications have recently made their way into therapeutic practice. Two main categories of antipsychotics, known as "typical" and "atypical," are defined by their therapeutic effectiveness, receptor selectivity, and profile of adverse effects. Common side effects of traditional antipsychotics include tardive dyskinesia, extrapyramidal symptoms, and other issues connected to the endocrine system. Although the aforementioned adverse effects are not very common with atypical antipsychotics, the fact that they might cause metabolic disorders is cause for concern [5-6]. Metabolic disorders, suicidal ideation, and extrapyramidal adverse events are uncommon with new generation antipsychotics such Asenapine, iloperidone, aripiprazole, and ziprasidone [7]. Diabetes mellitus, hyperlipidemia,

weight gain, hypotension, and other adverse effects are seen with these antipsychotics [8,9]. This is why it's crucial for doctors to carefully consider the side effects of atypical antipsychotics. This research aimed to evaluate the side effects of antipsychotic medicines specifically, Aripiprazole, Asenapine, Olanzapine, and Ziprasidone and their impact in schizophrenia patients, as there is a paucity of information in the literature about the specific adverse events associated with particular antipsychotic drugs.

Materials and Methods

The current comparison research was carried out in the Department of Psychiatry, Fatima Institute of Medical Sciences, and Kadapa from January 2021 to April 2022. A cohort of 120 individuals diagnosed with schizophrenia, ranging in age from 21 to 60 years, was selected for the study. Patients who were administered any psychotic medicines, such as Asenapine, Iloperidone, Olanzapine, or Risperidone, and expressed a willingness to participate were included.

Participants who had contraindications to the research, were pregnant or lactating, had mental health concerns, and expressed a desire to participate were excluded from the study. Research participants provided written informed permission and the research procedure was approved by the institutional ethics committee. Comprehensive clinical records, treatment protocols, and observed adverse effects were documented throughout the duration of the trial.

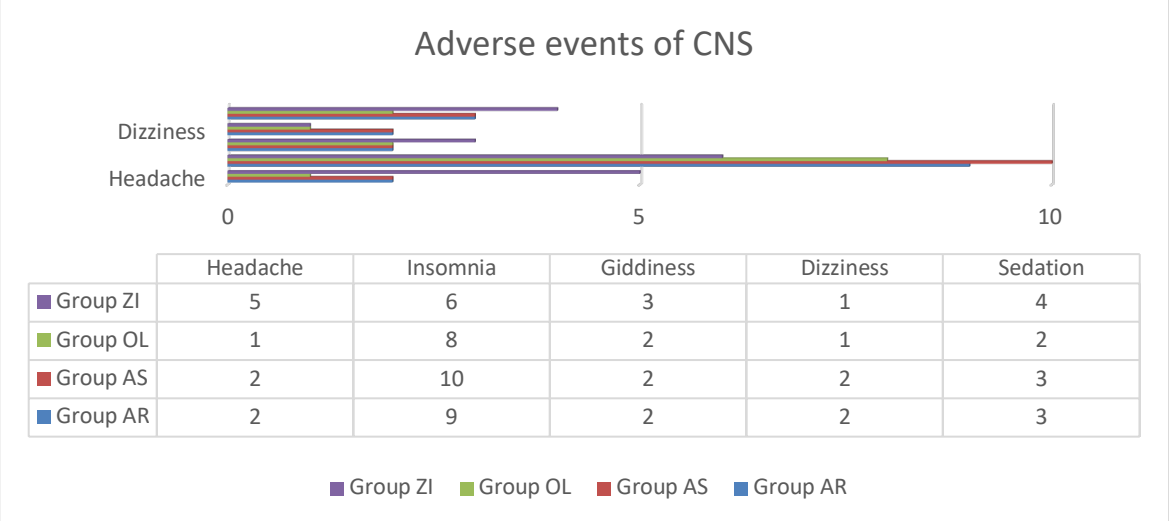
The research participants were randomly allocated into four study groups. Group AR (n=30) received treatment with aripiprazole, group AS (n=30) received management with Asenapine, group OL (n=30) received management with olanzapine, and group ZI (n=30) received treatment with ziprasidone.

The evaluation of side effects caused by antipsychotic drugs was conducted using a standardised questionnaire called the Antipsychotic Side-effects Evaluation Questionnaire [10]. This was followed by the implementation of the DIEPS and SQLS recommendations. Furthermore, after the therapy, patients were followed up at the end of the 1st, 3rd, 6th, 9th, and 12th months. Subsequent assessment of the patient was performed to observe the occurrence of any adverse reactions. The data from the questionnaire was extracted and transferred to a Microsoft Excel spreadsheet. The descriptive statistics were used to analyse the distribution of socio-demographic characteristics, study result, proportion of side effects, and category variables.

Results

Table 1: Sociodemographic data of study participants

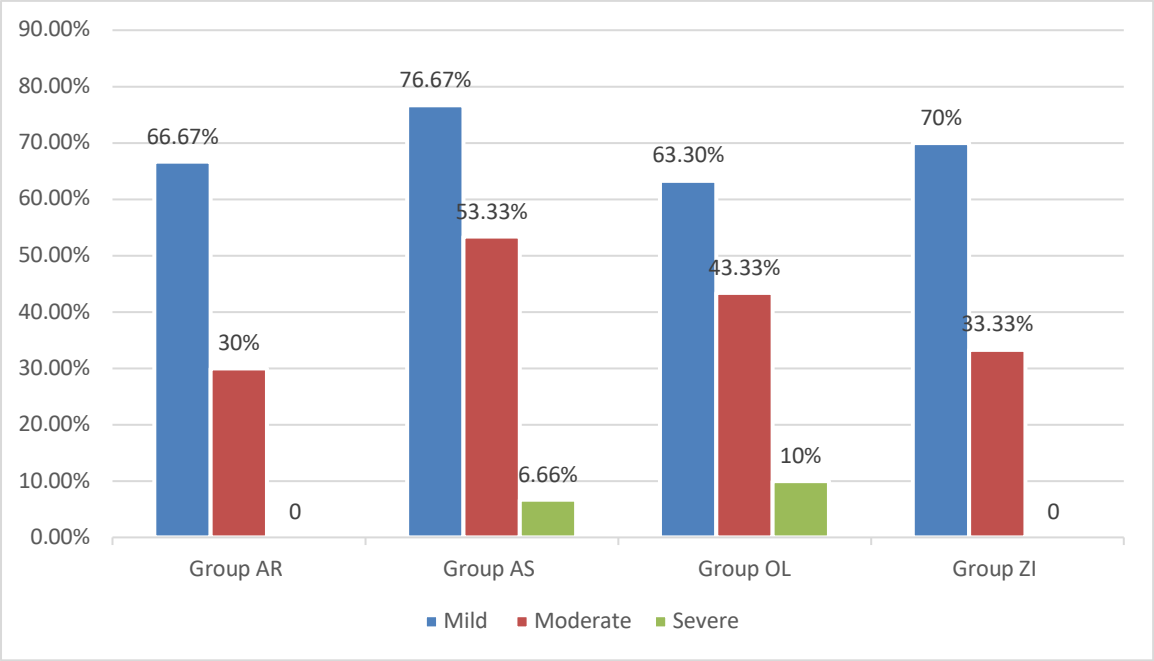
Demographic data	Group AR (n=30)	Group AS (n=30)	Group OL (n=30)	Group ZI (n=30)
Age (In years)				
21-30	06 (20%)	08 (26.6%))	06 (20%)	06 (20%)
31-40	12 (40%)	11 (36.6%)	11 (36.6%)	09 (30%)
41-50	07 (23.3%)	06 (20%)	07 (23.3%)	08 (26.6%))
51-60	05 (16.6%)	05 (16.6%)	06 (20%)	07 (23.3%)
Gender				
Male	21 (70%)	18 (60%)	20 (66.67%)	20 (66.67%)
Female	09 (30%)	12 (40%)	10 (33.33%)	10 (33.33%)
Weight	65.33±1.18	64.76±0.98	64.34±1.44	62.99±1.57



Graph 1: Adverse events related to Central nervous system

Table 2: Adverse events related to Extra Pyramidal system

Extra pyramidal effects	Group AR (n=30)	Group AS (n=30)	Group OL (n=30)	Group ZI (n=30)
Adverse events of extra pyramidal				
Akathisia	3 (10%)	3 (10%)	2 (6.67%)	2 (6.67%)
Dystonia	2 (6.67%)	2 (6.67%)	2 (6.67%)	2 (6.67%)
Tardive dyskinesia	3 (10%)	2 (6.67%)	1 (3.33%)	2 (6.67%)
Tremors	2 (6.67%)	2 (6.67%)	3 (10%)	3 (10%)
Endocrine associated adverse events				
Weight gain	11 (36.67%)	10 (33.33%)	19 (63.33%	08 (26.66%)
Menstrual associated	3 (10%)	3 (10%)	6 (20%)	2 (6.67%)
Pregnancy associated	4 (13.33%	2 (6.67%)	2 (6.67%)	2 (6.67%)
Lactation disturbances	4 (13.33%)	1 (3.33%)	1 (3.33%)	3 (10%)



Graph 2: Overall outcome of study groups

Discussion

The majority of participants were between the ages of 21 and 30, followed by 41 to 50 and 21 to 30, with males predominating in all drug categories. The mean weight was 65.33 kgs, 64.76 kgs, 64.34 kgs, and 62.99 kgs in groups AR, AS, OL, and ZI, respectively (Table 1). There was no need to alter the dosage of the study drug due to mild or moderate adverse effects in the majority of cases. The majority of cases were maintained without adjusting the dosage of the study medicine or any other medications being used at the same time. The medicine that is most often used for the treatment of bipolar disorder, schizophrenia, and behavioural problems is an atypical antipsychotic [11]. On the other hand, schizophrenia and its symptoms, such as a lack of personal care, may severely disrupt a person's daily routine, making them very upset. Antipsychotic medication adverse effects may worsen the problems these people already have [12]. Weight gain was observed in 36.67% of cases in group AR, 33.33% in group AS, 63.33% in group OL and 26.66% in group ZI. Menstrual associated complications were seen in 10% of cases in group AR and group AS, 20% in group OL, and 6.67% on group ZI. Pregnancy related complication was seen in 13.33% of group AR and 6.67% each in group AS, group OL and group ZI. Lactation disturbances was observed in 13.33% of cases in group AR, 10% in group ZI and 3.33% each in group AS and group OL (Table 2). Over 40%-60% of schizophrenia patients are fat [11]. Studies recommend first and second generation antipsychotics for illness treatment [13,14].

In a meta-analysis by Bak M et al., Asenapine caused 23% weight gain and olanzapine 41% [15], whereas Allison and Casey found 2.10 kg and 0.04 kg with ziprasidone in ten-week normal doses (13). The typical dosage of olanzapine (15 mg/day) may cause a 10 kg weight increase in the first year of therapy, but not in older adults [16,17]. Antipsychotic medication causes sexual dysfunction by inhibiting D2 receptors in pituitary lactotrophs, resulting in increased prolactin production [18,19]. According to the literature, high exposure to antipsychotic medications may

cause extrapyramidal symptoms in schizophrenia [11]. Extrapyramidal symptoms were equally prevalent across all medication groups in the current investigation (Table 2). According to the literature, tardive dyskinesia is less common with olanzapine than with conventional antipsychotics (20). In a clinical experiment using Iloperidone, extrapyramidal symptoms were reported in 7-8% of individuals. Another research found that olanzapine treated 23.9% of extrapyramidal symptoms [21,22].

In this research, insomnia was the most prevalent adverse event of the central nervous system in all study groups, particularly in group AS (33.33%), group AR (30%), group OL (26.67%), and group ZI (20%). Headaches were more prevalent in group ZI (n=5). Sedation was prevalent in groups ZI (13.33%), AS (10%), AR (10%), and OL (6.67%). Giddiness was reported in 20% of patients in group ZI and 6.67% of cases in groups OL, AS, and AR (Graph 1). Several investigations found similar results for Asenapine (49.2%), olanzapine (48.7%), and iloperidone (33%) instances [23,24].

The majority of adverse effects are controllable in the study medication groups. The current research has limitations in terms of its single-centric methodology and short follow-up duration. To examine with a large sample size and numerous medications, further multicentric long-term follow-up studies are needed.

Conclusion

The findings of this research do not demonstrate any disparity in the adverse effects seen with various antipsychotic medications. Aripiprazole, Ziprasidone, and Asenapine shown significant efficacy in alleviating negative symptoms of schizophrenia and mitigating related adverse effects among all study drugs. In order to assess and compare the effectiveness and acceptability of atypical antipsychotics, it is necessary to conduct well-designed clinical studies. In addition, it is necessary to include certain characteristics, such as illness outcome at different dosages, quality of life (QOL), recovery rate, and length of hospitalisation, in order to assess the impact of atypical antipsychotic medications on individuals with schizophrenia.

References

1. Lavretsky H: History of schizophrenia as a psychiatric disorder. Clinical handbook of schizophrenia. Mueser KT, Jeste DV (ed): Guilford Press, New York, NY; 2008. 3-13.
2. American Psychiatric Association: Diagnostic and statistical manual of mental disorders (5th edition). American Psychiatric Publishing, Inc., Arlington, VA; 2013.
3. Charlson FJ, Ferrari AJ, Santomauro DF, et al.: Global epidemiology and burden of schizophrenia: findings from the Global Burden of Disease Study 2016. Schizophr Bull. 2018, 44:1195-203.
4. P. Li, G.L. Snyder, K.E. Vanover. Dopamine targeting drugs for the treatment of schizophrenia: past, present and future. Curr. Top. Med Chem., 2016;16 (29): 3385-3403.
5. MC Mauri, S Paletta, M Maffini, A Colasanti, F Dragogna, C Di Pace, AC Altamura. Clinical pharmacology of atypical antipsychotics: An update. EXCLI Journal. 2014; 13:1163-1191.
6. Zanarini MC, Frankenburg FR. Olanzapine treatment of female borderline personality disorder patients: A double-blind, placebo-controlled pilot study. J Clin Psychiatry. 2001; 62:849–54.
7. Shriqui CL. Medicaments antipsychotiques, troubles de la personnalite, conduites d' agitation, conduits suicidarieset addictions. In: Olie JP, Dalery J, Azorin JM, editors. Antipsychotic drugs: Evolutonou revolution? Paris Acanhus Publishing; 2001; 467–87.
8. Meyer JM. Effects of atypical antipsychotics on weight and serum level lipid levels. J Clin Psychiatry. 2001; 62(suppl 27):27–34.
9. Sengupta G, Bhowmick S, Hazra A, Datta A, Rahaman M. Adverse drug reaction monitoring in psychiatry outpatient department of an Indian teaching hospital. Indian J Pharmacol. 2011; 43:36–9.
10. Wolters HA, Knegtering R, Wiersma D, van den Bosch RJ. Evaluation of the subjects' response to antipsychotics questionnaire. Int Clin Psychopharmacol. 2006; 21(1):63-69.
11. Alp Ucok, Wolfgang Gaebe. Side effects of atypical antipsychotics: a brief overview. World Psychiatry. 2008; 7:58-62.
12. Sartorius N. Physical illness in people with mental disorders. World Psychiatry. 2007; 6:3-4.
13. Allison DB, Casey DE. Antipsychotic-induced weight gain: a review of the literature. J Clin Psychiatry. 2001; 62(Suppl. 7):22-31.
14. Wirshing DA, Wirshing WC, Kysar L et al. Novel antipsychotics: comparison of weight gain liabilities. J Clin Psychiatry. 1999; 60: 358-63.
15. Bak M, Fransen A, Janssen J, van Os J, Drukker M. Almost all antipsychotics result in weight gain: a meta-analysis. PLoS One. 2014; 9(4):e94112.
16. Nemeroff CB. Dosing the antipsychotic medication olanzapine. J Clin Psychiatry. 1997; 58:45-9.
17. Rondanelli M, Sarra S, Antoniello N et al. No effect of atypical antipsychotic drugs on weight gain and risk of developing type II diabetes or lipid abnormalities among nursing

home elderly patients with Alzheimer's disease. Minerva Med. 2006; 97:147-51.
18. Kelly DL, Conley RR. Sexuality and schizophrenia: a review. Schizophr Bull. 2004; 30:767-79.
19. Dervaux A, El Omari F. Sexual dysfunction in schizophrenic patients, the role of antipsychotics. Presse Med. 2005; 34:529-32.
20. Marder SR, Essock SM, Miller AL et al. The Mount Sinai conference on the pharmacotherapy of schizophrenia. Schizophr Bull. 2002; 28:5-16.
21. FANAPT (Iloperidone) Tablets 1mg, 2mg, 4mg, 6mg, 8mg, 10mg & 12mg [Prescribing Information] East Hanover, NJ: Novartis Pharmaceuticals Corporation: Revised January 2013.
22. Sharif ZA. Overview of Safety and Tolerability of Atypical Antipsychotics Used in Primary Care. Primary Care Companion J Clin Psychiatry. 2003; 5[s3]:14–21.
23. SAPHRIS (Asenapine Maleate Sublingual Tablet) 5mg &10mg [Prescribing Information] Whitehouse Station (NJ); Merck Sharp &Dohme Corp: Revised 10/2012.
24. Cazorla P, Mackle M, Zhao J, Ha X & Szegedi A. Safety and tolerability of switching to asenapine from other antipsychotic agents: pooled results from two randomized multicenter trials in stable patients with persistent negative symptoms in schizophrenia. Neuropsychiatric Disease and Treatment. 2012; 8:247–57.