Journal of Medicines Development Sciences, 2026, Volume 11, Issue 3
https://bbwpublisher.com/journal/JMDS
ISSN Online:2382-6371
ISSN Print:2382-6363

Analysis of Clinical Efficacy and Safety of Second-generation Antipsychotic Drugs in the Treatment of Schizophrenia Patients

Jiangyang Liu*

Haian Third People's Hospital, Haian 226600, Jiangsu, China

Author to whom correspondence should be addressed.

Copyright: © 2026 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: *Purpose:* This study focuses on patients with schizophrenia and analyzes the application effects of different second-generation antipsychotic drugs. *Methods:* 60 patients with schizophrenia were randomly selected as observation subjects, all included from June 2024 to June 2025. They were divided into two groups according to different medications: the risperidone group and the olanzapine group, with 30 cases in each group. The treatment effect and safety were determined by comparing symptom improvement. *Results:* After treatment, the PANSS scores of the two groups of patients were significantly lower than before treatment, and the decrease in the olanzapine group was better than that in the risperidone group ($P < 0.05$). There was no significant difference in the incidence of total adverse reactions between the two groups ($P > 0.05$). The olanzapine group had a higher incidence of weight gain, dizziness and drowsiness, and the risperidone group had a significantly higher incidence of extrapyramidal reactions and elevated prolactin. *Conclusion:* Both risperidone and olanzapine can achieve definite curative effects in patients with schizophrenia, and both can effectively improve patients' mental symptoms. Compared with risperidone, olanzapine has more advantages in reducing extrapyramidal reactions and increasing prolactin. Clinical medication can be selected according to the individual conditions of the patient.

Keywords: Second generation antipsychotics; Schizophrenia; Clinical efficacy; Safety

Online publication: September 16, 2026

1. Introduction

Schizophrenia is a severe mental disorder with unknown etiology and protracted course. Protracted course, repeated attacks, and high disability rate characterize it. It can seriously damage the patient's cognitive function, thinking function, and social function, and seriously affect the patient's quality of life and physical and mental health [1]. Moreover, schizophrenia has a long course and is prone to recurring attacks, so it requires long-term clinical treatment. Currently, antipsychotic drugs are still the main treatment method

in clinical practice. Different patients have significant differences in efficacy, adverse reactions, and drug tolerance. Choosing effective and safe drugs is the key to controlling the disease [2]. Second-generation antipsychotic drugs are new therapeutic drugs. Compared with traditional drugs, the drug targets are more precise and have a milder regulatory effect on the body's neurotransmitters. They have been widely used in the clinical treatment of schizophrenia at this stage [3]. Currently, clinical comparative studies on the two types of antipsychotic drugs are still ongoing. In order to further clarify the clinical application value of second-generation antipsychotic drugs, olanzapine and risperidone are second-generation antipsychotic drugs and have been widely used in clinical treatment. However, the therapeutic effect of the combined use of these two drugs requires further research. Based on this, this study focuses on patients with schizophrenia, explores the application effects of different second-generation antipsychotic drugs, and evaluates the safety of the drugs. The report is as follows.

2. Materials and methods

2.1. General information

A retrospective analysis was conducted on 60 schizophrenia patients treated at Hai'an Third People's Hospital from June 2024 to June 2025, and they were evenly divided into the risperidone group and the olanzapine group, with 30 cases in each group. There were 16 males and 14 females in the risperidone group, aged 22 to 58 (39.65 ± 5.24) years old. There were 15 males and 15 females in the olanzapine group, aged 21 to 59 (38.92 ± 5.18) years old. The data of the two groups of patients were not significantly different after statistical verification ($P > 0.05$).

Inclusion criteria: (1) Meet the clinical diagnostic criteria for schizophrenia; (2) The clinical data are complete and the patient can cooperate with the full treatment; (3) The patient and their family give informed consent and cooperate with the investigation. Exclusion criteria: (1) Combined with organic mental disorders or mental disorders caused by psychoactive substances; (2) Patients who are unable to cooperate in completing the study evaluation due to severe mental symptoms; (3) Patients who are intolerant to the medication in this study, or have other drug contraindications.

2.2. Method

The risperidone group was given oral risperidone. The initial dose of risperidone was 1 mg per day, administered orally in two doses. After 1 week of treatment, the dose was adjusted according to the patient's condition and tolerance. The conventional maintenance dose was 2 to 6 mg/d per day.

The olanzapine group was given oral treatment with olanzapine tablets, with a starting dose of 5 mg/d. The dose was adjusted according to the condition and tolerance, with a maximum dosage of no more than 20 mg/d.

The two groups were treated continuously for 12 weeks. During the treatment period, no other antipsychotic drugs or mood stabilizers were used in combination, and adverse drug reactions were closely monitored.

2.3. Observation indicators

2.3.1. Clinical efficacy

The Positive and Negative Syndrome Scale (PANSS) is used to evaluate the improvement of patients' mental

symptoms. This scale includes three core indicators of positive symptoms, negative symptoms, and general psychopathology. The greater the decrease in the score, the more significant the clinical efficacy.

2.3.2 Compare the medication safety of the two groups

including the occurrence of extrapyramidal reactions, dizziness and drowsiness, weight gain, and elevated prolactin.

2.4. Statistical methods

The data were included in SPSS 24.0 software for analysis. Paired t-test was used to compare before and after intervention, and the χ^2 test was used to compare adverse reactions. If the difference $P < 0.05$, it was statistically significant.

3. Results

3.1. Comparison of PANSS scores between the two groups of patients before and after treatment

Comparing the results of PANSS scores such as negative symptoms, positive symptoms, and general psychopathological symptoms between the two groups before treatment, there was no significant difference ($P > 0.05$); the PANSS score of the olanzapine group after treatment decreased significantly ($P < 0.05$) in the libperidone group (**Table 1**).

Table 1. Comparison of PANSS scale scores between the two groups (mean ± SD, points)

Group	n	Positive symptoms		Negative symptoms		General psychopathological symptoms	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Risperidone group	30	25.36 ± 4.12	18.62 ± 3.54	22.15 ± 3.86	16.35 ± 3.21	48.65 ± 6.32	35.26 ± 5.14
Olanzapine group	30	25.41 ± 4.08	14.25 ± 3.16	22.09 ± 3.91	12.18 ± 2.85	48.59 ± 6.28	29.12 ± 4.86
t value	-	0.047	5.045	0.060	5.324	0.037	4.758
P value	-	0.963	< 0.001	0.952	< 0.001	0.971	< 0.001

3.2. Comparison of the incidence of adverse drug reactions between the two groups of patients

There was no significant difference in the incidence of total adverse reactions between the two groups during treatment ($P > 0.05$). The olanzapine group had a higher incidence of weight gain and dizziness and drowsiness, while the risperidone group had a higher incidence of extrapyramidal reactions and elevated prolactin (**Table 2**).

Table 2. Comparison of adverse reactions between the two groups [n (%)]

Group	Extrapyramidal reaction	Dizziness and drowsiness	Increased body weight	Elevated prolactin	Overall incidence
Risperidone group (n = 30)	7 (23.33)	4 (13.33)	3 (10.00)	9 (30.00)	14 (46.67)
Olanzapine group (n = 30)	2 (6.67)	8 (26.67)	10 (33.33)	2 (6.67)	13 (43.33)

χ^2 value	2.092	1.667	4.812	5.455	0.067
P value	0.148	0.198	0.028	0.020	0.795

4. Discussion

A high prevalence rate, disease recurrence rate, and disability rate characterizes schizophrenia. The occurrence and progression of the disease are directly related to the metabolic disorders of central dopamine, serotonin and other neurotransmitters. Hyperdopamine function is the main cause of positive symptoms such as hallucinations, delusions, and impulsivity in patients, while abnormal serotonin regulation is mostly involved in the occurrence of negative symptoms such as apathy and hypowillia [4]. The disease is often protracted and does not heal. After repeated recurrences, it will cause irreversible damage to the patient's cognitive function, causing the patient to lose the ability to live a normal life and engage in social interactions. Therefore, long-term standardized, safe and effective drug treatment is the core way to improve the prognosis of patients. However, continued drug use may have some side effects on the patient's health, such as glucose metabolism disorders caused by long-term drug use, which will increase the patient's financial and life burdens, and may even induce other more serious health problems. Therefore, effective treatment methods need to be adopted during medication treatment to reduce the impact of adverse reactions. Risperidone is a commonly used second-generation antipsychotic drug. Its pharmacological effects are more in line with the multiple pathological mechanisms of schizophrenia. It can competitively block dopamine D2 receptors and 5-hydroxytryptamine 2A receptors at the same time to achieve dual neurotransmitter regulatory effects. It can have a good intervention effect on both positive and negative symptoms. At the same time, the drug receptors are more selective and interfere less with the body's normal neural pathways, making the overall treatment advantage more obvious [5]. Risperidone belongs to a new generation of atypical antipsychotics and is one of the most important first-line antipsychotics. It is mainly used in the treatment of schizophrenia. In addition to being effective on positive symptoms, it also has a relatively good effect on negative symptoms and emotional symptoms [6]. Olanzapine is a typical second-generation antipsychotic drug and is widely used in the treatment of schizophrenia. Relevant studies have pointed out that olanzapine can significantly inhibit the release of excitatory neurotransmitters and block the conduction of excitatory signals at synapses [7].

The efficacy data of this study showed that the positive symptoms, negative symptoms, and general psychopathology scores of the olanzapine group after treatment were lower than those of the risperidone group. There were significant differences in the data between the groups, $P < 0.05$. Risperidone mainly reduces the positive symptoms of schizophrenia by precisely regulating the functions of dopamine D2 receptors and serotonin 2A receptors, inhibiting excessive neurotransmission of dopamine and serotonin [8]. The mechanism of action of olanzapine is mainly to block dopamine D4 receptors and 5-HT2A receptors in the central nervous system, thereby "attacking" related psychiatric symptoms [9]. Both the risperidone group and olanzapine can effectively antagonize dopamine and 5-hydroxytryptamine receptors by regulating neurotransmitter balance in the central nervous system, thereby controlling the positive, negative and general psychopathological symptoms of schizophrenia, and have a significant effect on improving the symptoms of patients [10].

In terms of adverse reactions, the increase in body weight and the incidence of dizziness and drowsiness

in the olanzapine group were significantly higher than those in the risperidone group. The reason may be related to the strong antagonistic effect of olanzapine on histamine H1 receptors and 5-hydroxytryptamine 2C receptors. Histamine H1 receptor antagonism will inhibit the excitability of the central nervous system, leading to drowsiness and other symptoms; 5-hydroxytryptamine 2C receptor antagonism will affect the body's appetite regulation and energy metabolism, causing patients to have hyperphagia, reduced energy consumption, and then increased body weight. In contrast, risperidone has relatively little impact on metabolism and is slightly safer. Risperidone is a benzisoxazole derivative that relieves various symptoms in patients by balancing and blocking 5-HT and DA receptors. The incidence of extrapyramidal reactions and prolactin elevation in the risperidone group was significantly higher than that in the olanzapine group. Reasons analyzed: Risperidone has a strong antagonistic effect on dopamine D2 receptors in the midbrain-striatal pathway, which can easily lead to an imbalance of dopaminergic neurotransmission, leading to extrapyramidal symptoms such as tremor, myotonia, and akathisia. Systemic reaction: at the same time, its antagonism of the dopamine D2 receptor in the hypothalamic-pituitary pathway will inhibit the secretion of prolactin-inhibitory factors, leading to an increase in serum prolactin levels. Some patients may experience symptoms such as menstrual disorders, breast tenderness, and galactorrhea, especially in female patients.

5. Conclusion

In summary, the treatment of schizophrenia patients with risperidone and olanzapine can achieve curative effects. Both can effectively control the positive, negative and general psychopathological symptoms of patients, and the short-term application safety is good. When treating schizophrenia, decisions should be made based on the actual situation of the patient to achieve individualized medication, reduce the occurrence of adverse reactions, and improve the patient's quality of life and prognosis.

Disclosure statement

The author declares no conflict of interest.

References

[1] Zhu ZX, Li ZZ, Ning YP, 2024, Progress in Drug Treatment of Schizophrenia. Journal of Chongqing Medical University, 49(5): 625–630.

[2] Su LL, 2024, Effects of Second-Generation Antipsychotic Drugs on Electrocardiograms in Patients With Schizophrenia. Medical Theory and Practice, 37(22): 3831–3833.

[3] Zhao JP, 2023, Analysis of the Effect of Risperidone Combined With Olanzapine in the Treatment of Elderly Patients With Schizophrenia and Its Impact on the Body's Glucose and Lipid Metabolism. Chinese Practical Medicine, 18(7): 123–126.

[4] Shen BH, Wang CP, Gao KR, et al., 2023, Analysis of Influencing Factors of Liver Damage Caused by Long-Term Use of Second-Generation Antipsychotic Drugs in Patients With Schizophrenia. Chinese General Medicine, 21(10): 1693–1697.

[5] Chen M, Zhang H, 2024, Study on the Effects of Different Second-Generation Antipsychotic Drugs on Glucose and Lipid Metabolism in Patients With Mental Disorders. Journal of Psychiatry, 37(2): 112–115.

[6] Yuan AP, Yang Z, Liu C, 2024, Effects of Clozapine Combined With Risperidone on Inflammatory Factor Levels and Positive and Negative Symptom Scale Scores in Patients With Schizophrenia. Chinese Contemporary Medicine, 31(15): 36–39.

[7] Tang BL, 2024, Analysis of Adverse Reactions and Treatment Methods of Risperidone Treatment for Schizophrenia. Northern Pharmacy, 21(1): 190–192.

[8] Tu XJ, Gan K, 2024, Observation on the Clinical Efficacy of Olanzapine Tablets Combined With Risperidone in the Treatment of Schizophrenia. Modern Diagnosis and Treatment, 35(4): 533–534 + 537.

[9] Zhao P, Wang L, 2023, Comparison of the Effects of Olanzapine and Risperidone on Glucose and Lipid Metabolism and Body Weight in Patients With Schizophrenia. Clinical Medicine, 43(5): 45–47.

[10] Wang J, Fan H, 2025, Analysis of the Efficacy of Risperidone and Olanzapine in the Treatment of Elderly Schizophrenia and Their Impact on Glucose and Lipid Metabolism. Contemporary Medical Review, 23(20): 100–102.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.