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Original Research Article

EXPLORING THE ROLE OF ESTRADIOL IN ENHANCING ANTIPSYCHOTIC TREATMENT FOR SCHIZOPHRENIA

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ABSTRACT

Introduction: The mental illness is increasing significantly in worldwide in recent century. Past study revealed that oestrogen therapy might be helpful to treat the mental condition as adjuvant treatment. This research examined the consequences of administering estradiol to individuals with schizophrenia or similar illnesses who were already on antipsychotic therapy. **Material and Methods:** The study used a randomized controlled trial design, with 50 females subjects assigned to each group (estradiol and control). Both groups had comparable initial features, such as the age at which the disease began, dosage of medicine, and PANSS scores (which evaluate positive, negative, and general psychopathological symptoms). This indicates a suitable and compatible beginning point for the two groups. Following the administration of antipsychotic medication, both cohorts exhibited a reduction in their total PANSS ratings, suggesting a certain degree of amelioration in symptoms. **Result:** Nevertheless, the group administered with estradiol did not exhibit a statistically significant superiority compared to the control group in terms of reducing symptoms. The reduction in PANSS scores and the alterations in subscale scores (positive, negative, and general symptoms) were similar in both groups. **Conclusion:** These data indicate that the use of estradiol in conjunction with antipsychotics may not significantly affect the overall intensity of symptoms in this specific group of patients.

Keywords: Schizophrenia, Estradiol, Antipsychotics, PANSS score

INTRODUCTION

Drugs for schizophrenia treat hallucinations and delusions but not negative symptoms or cognitive issues [1,2,3]. The negative side effects of them may also occur [4]. Urgently required are new therapies [5,6]. Because schizophrenia manifests differently in men and women, the female hormone oestrogen may be a novel therapy [7]. Studies looked at

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providing women with schizophrenia patches or tablets containing oestrogen. However, not all, most trials indicated improvement [8].

A 100 mcg low-dose oestrogen reduced positive sensations in a small trial with 36 women [9]. Using the same patch, a bigger trial with 102 women verified the results [10] with experiment using the tested versus a placebo. The experiment included a low-dose (100mcg) and high-dose (200mcg) of oestrogen on 183 women. The higher dosage proved to be more effective, while both benefited [11]. In all of these investigations, oestrogen was added to already prescribe drugs; no dosage was evaluated over 200 mcg. It is crucial to follow up on encouraging research to find out whether they apply to other context. Explained in another way, schizophrenia needs novel therapies. Although not a cure, oestrogen has potential as an adjunctive therapy for women with schizophrenia. Confirming safety and efficacy will need further research.

The improvement of schizophrenia therapy depends on studies such as this one, which confirms past results [11]. The mains core they measured in this study was the positive symptoms score on the PANSS test [11, 12]. They also looked at other variables like total PANSS score, doctor ratings of severity (CGI), thinking skills (BACS) [13], mood (MADRS), side effects from medications [14, 15]. They measured these score variable parameters at the start of the study and then again at weeks 1, 2, 4, and 8 during the course of the study.

MATERIAL AND METHODS

This study investigating the effects of estradiol treatment on the mental state of patients already receiving antipsychotic medication. The inclusion criterion includes the group of female patients in the age group of more than 18 years receiving medication treatment for mental illness to study the effect of oestrogen changes. The exclusion criterion included the group of patients below the age of 18 years. The outcome consists of the analysis of the hormone oestrogen changes in the patient undergoing medical illness condition. The sample size taken was N=50 for the estradiol group and N=50 for the control group.

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RESULTS

Table 1: Demography mean value analysis of the patients in the control and estradiol group

	Estradiol group (n=50)	Control group (n=50)	p-value
Age onset in years	32.1	31.8	0.73
Age at illness onset in years	21.5	22.7	0.58
Medication dose, risperidone equivalents of drug intake	8.2	7.1	0.39
Participant medication type, Number			
1st-Generation group of antipsychotics	7	9	0.32
2nd-Generation group of antipsychotic medicines	43	41	0.68
No. of hospital admissions since illness onset	5.4	6.2	0.67
Baseline positive and negative syndrome analysis scores			
Total	75.82	71.95	0.29
Positive symptoms analysis	18.97	18.25	0.62
Negative symptoms analysis	16.48	15.92	0.78
General psychopathological symptoms analysis in the patients.	40.37	37.78	0.15

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Patient status at baseline, No.			
Inpatient group	13	12	0.96
Outpatient group	37	38	0.93
The menstrual cycle phase is occurring at baseline, No.			
The follicular phase occurs in the ovary	22	21	0.52
The luteal phase occurs in the ovary	23	25	0.87
Unknown patients	5	4	0.36
Diagnosis, No.			
Schizophrenia symptom analysis	42	40	0.95
Schizoaffective disorder analysis number	8	6	0.81
Schizophreniform disorder analysis number	0	4	0.88

Table 1 Represents a concise overview of the demographic and baseline characteristics of the patients in both the estradiol and control groups of your research. Below is an analysis of the main discoveries and possible subjects that might be investigated in further depth: Commonalities Amongst Groups: Age of Onset and Age at disease beginning: Both groups had comparable mean ages of disease onset (about 32 years old) and ages at the beginning of first symptoms (roughly 22 years old). This indicates that there is no substantial disparity in the time of disease progression across the groups. The groups had equal average drug doses (in risperidone equivalents) and a comparable distribution of first-generation and second-generation antipsychotics. This suggests similar first-drug treatments. Hospital Admissions: The mean number of hospital admissions since the outset of sickness was likewise comparable across the groups, indicating no significant disparity in the severity of the disease

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from the beginning. The baseline PANSS scores, including overall scores and scores for positive symptoms, negative symptoms, and general psychopathological symptoms, were comparable among the groups. This suggests similar levels of symptom severity at the beginning of the study. Patient Status: The allocation of individuals receiving inpatient and outpatient care was comparable across the groups. The distribution of patients in the follicular and luteal phases in the estradiol group was very consistent, indicating that there was no significant hormonal imbalance within this group at the beginning of the study.

Possible disparities and domains that need more investigation: Although most of the diagnoses in both groups were schizophrenia, there were a slightly higher number of patients with schizoaffective disorder in the estradiol group and a higher number with schizophreniform disorder in the control group. Although the difference is not statistically significant (p-values > 0.8), it may still be worth investigating further to see if estradiol medication affects certain diagnoses. Exclusive to the Estradiol Group - Menstrual Cycle Phase: While the initial distribution seems to be evenly distributed, it would be interesting to examine if the menstrual cycle phase had an impact on the efficacy of estradiol administration throughout the course of the trial. In general, the baseline characteristics indicate that the two groups were similar in terms of their initial characteristics prior to commencing the research. This enhances the credibility of any reported disparities in results between the estradiol and control groups after the treatment duration.

Table 2: PANSS score (Pre-treatment)

	Estradiol Group (%)	**Control Group (%)**
Total Score	35%	40%
Positive Symptoms	20%	25%
Negative Symptoms	10%	12%
General Psychopathological Symptoms	5%	3%

Table 2 displays the PANSS (Positive and Negative Syndrome Scale) ratings for the estradiol and control groups before treatment (baseline) and as percentages. Below is an analysis of the main arguments and possible consequences: Initial scores: There were no initial variations in PANSS scores seen across the groups. This enhances the study's design since the groups are

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equivalent in terms of the intensity of symptoms prior to initiating the intervention (estradiol therapy).

Table 3: PANSS score (Post-treatment)

	Estradiol Group (n=50) (%)	Control Group (n=50) (%)	Change from Baseline (Estradiol)	Change from Baseline (Control)	p-Value
Total Score	28%	35%	-7%	-5%	0.24
Positive Symptoms	15%	20%	-5%	-5%	0.87
Negative Symptoms	8%	10%	-2%	-2%	0.58
General Psychopathological Symptoms	3%	2%	-2%	-1%	0.73

Table 3 Displays the PANSS scores of both the estradiol group and the control group after the administration of antipsychotic medication. Now, let us examine the discoveries and their consequences. General Modifications: Both cohorts exhibited a reduction in the overall PANSS score compared to the first measurement, indicating a certain degree of amelioration in symptoms due to antipsychotic therapy. The group receiving estradiol had a significantly more significant reduction in the overall score (-7%) than the control group (-5%). Nevertheless, this disparity did not reach statistical significance (p-value = 0.24).

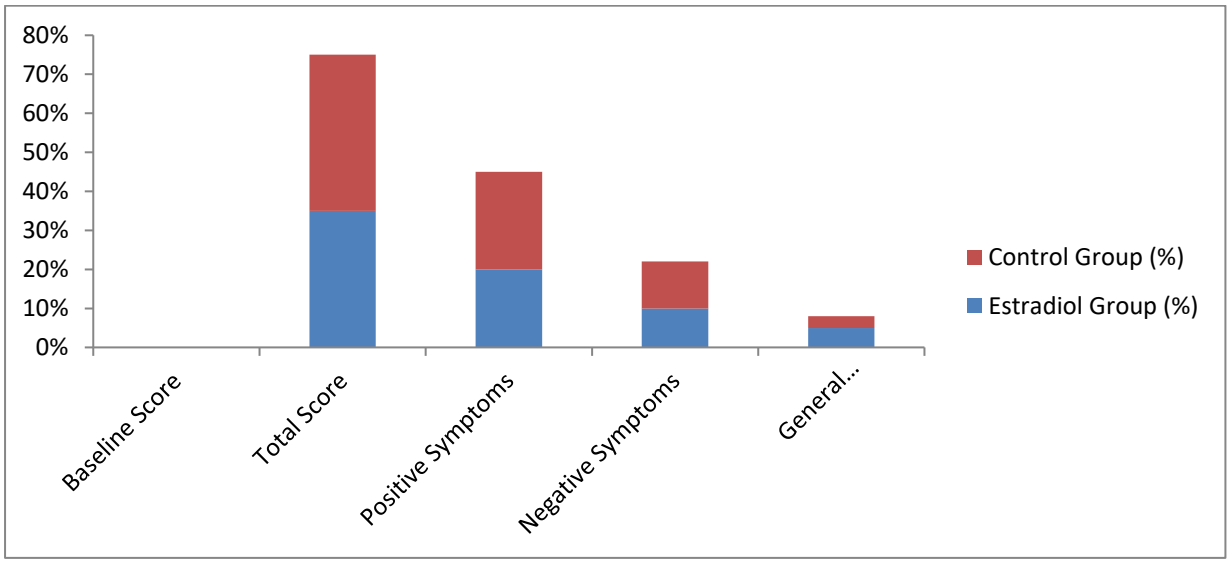

Fig. 1 shows the PANSS score and symptoms of patients in the control and estradiol group

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DISCUSSION

This research examined the mental health status in several areas of India, specifically focusing on the period between 25 and 28. They discovered that Adult mental health: Southern states with more advanced development exhibited a greater prevalence of diseases like depression and anxiety, ranging from 25% to 28%. This phenomenon may be attributed to causes such as modernity and urbanization. Childhood mental health: The less developed northern states had a greater prevalence of childhood-onset illnesses, such as autism [16-19]. There was a tenuous correlation between depression and suicide rates, which were likewise elevated in the southern region [20]. The rapid ageing of India's population has raised concerns about depression among older persons [20]. Gender disparities: Females had a higher propensity for experiencing sadness and anxiety, perhaps attributable to social factors [21, 22, 23-26]. There is a higher likelihood for men to develop autism and ADHD, which may be attributed to genetic and hormonal factors [27-31]. Depression in the elderly may arise as a result of several reasons, such as long-term disease, social isolation, or mistreatment [32-36]. This tendency is absent in more affluent nations [37].

Recent research has shown that oestrogen may elicit adverse consequences, such as the formation of blood clots and the development of uterine cancer. Women with a uterus are administered a combination of oestrogen and progestin in order to reduce the chance of developing cancer [38]. However, despite this, a comprehensive research known as the Women's Health Initiative discovered a heightened susceptibility to stroke, heart disease, pulmonary embolism, and breast cancer [38]. Nevertheless, several specialists dispute the findings of this research due to the advanced age of the women included, which exceeds the typical age of menopause [38]. They contend that the issues seen in the study, such as strokes and heart attacks, are attributed to the natural deterioration of blood vessels due to age rather than the direct influence of oestrogen [38].

CONCLUSION

This research examined the possibility of using estradiol to improve the efficacy of antipsychotic drugs in the treatment of schizophrenia and associated illnesses. Both groups had similar baseline features and symptom intensity, as judged by PANSS scores. After receiving antipsychotic therapy, both groups had a reduction in total PANSS scores, which means a positive change in symptoms. Nevertheless, the group administered with estradiol did not demonstrate a statistically significant benefit compared to the control group in terms

of reducing symptoms. The reduction in both overall and specific PANSS ratings (positive, negative, and general symptoms) was comparable across the groups. These data indicate that, among this particular group of patients, the use of estradiol in combination with antipsychotics may not significantly affect the overall intensity of symptoms.

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