RESEARCH

ROLE OF TESTOSTERONE IN TREATMENT OF SCHIZOPHRENIA AND ITS INTERACTION WITH ANTIPSYCHOTIC DRUGS CHLORPROMAZINE AND RESPERIDONE

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Abstract

Background: Schizophrenia is characterised by paranoid, hallucination and delusion. The person with such disorders can't lead a normal life; rather they are great problem to the family members, society and their occupation as well. Hence such psychiatric patients must be treated efficiently. **Materials and Methods:** Out of 14 schizophrenic, 7 patients (seven) (group-A) were treated with CPZ 100 Mg tablet twice daily orally and Risperidone 2 Mg twice daily orally for 30 days and 7 (seven) group-B treated with CPZ 100 mg orally and Risperidone 2 mg twice daily orally, sustanon (testosterone) 100 mg 1 amp Intra muscular dose. Fallow up was done on every eighth day from starting day of treatment to assess the BPRS, SAPS and SANS psychotic rating scales and adverse reactions. **Result:** BRPs score in group-A was 22.15% and in group-B 35.32% SAPS score in group-A was 20.32% and 32.1% in group-B. SANS score were 21.22% in group-A and 45.40% in group-B. When compared statistically all score had significant results ($p<0.001$). **Conclusion:** The administration of testosterone along with anti-psychotic drugs has most pronounced in negative symptoms of schizophrenia.

INTRODUCTION

Schizophrenia is a neuro development disorder affecting 1-2% of the population. Beginning in adolescence schizophrenia typically causes a dramatic, lifelong impairment in social and occupational functioning.[1,2] It is characterised by negative symptoms such as impaired motivation, drop in spontaneous speech and social withdrawal. Positive symptoms such as delusion and hallucinations and cognitive symptoms, such as disturbances in speech, attentions and thought, eventually impairing the person's capability to communicate with others.[3,4] Hormones have an effect on physiology, emotions, cognition, and behaviour without the necessity for conscious input or control.

Recent neuro-endocrinological studies have reported that, gonadal sex hormones play a significant role in the patho-physiology of schizophrenia.[5] Low testosterone levels are also associated with negative symptoms in chronic schizophrenia. Patients receiving treatment for schizophrenia also show high rate of sexual dysfunction.[6] Hence sex steroids modulate cognitive deficits associated with schizophrenia.[7,8] The aim of the study to evaluate the administration of testosterone along with antipsychotic drugs and observe the outcome of schizophrenic symptoms which may be helpful for these patients to lead normal social and sexual life.

MATERIALS AND METHODS

14 (fourteen) schizophrenic patients age between 20-60 year visited to psychiatry OPD of IIMS warudi, Badnapur (Tq), Jalna (dist) Maharashtra - 431202 were studied.

Inclusive Criteria

Schizophrenic patients clinically diagnosed by ICD-10 diagnostic criteria.

Exclusion Criteria

Pregnant and lactating mothers, patients with hepatic and renal diseases were excluded from study.

Method

Out of 14 (fourteen) 7 patients grouped as A group and 7 patients as group-B (Written consent was obtained from all patients / attendant or relatives). The follow up was done every 8th day up to 30 days and illness was monitored on every 8th day by BPRS, SPS and SANS psychiatric rating scales were assessed. During follow-up apart from assessment psychiatric symptoms, adverse reactions

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of administrated drugs are also noted. Blood pressure, pulse, weight of patient also recorded on every follow-up. The parameters of psychiatry BPRS (Brie Psychiatric Rating Scale), SAPS (scale for Assessment of positive symptoms) and SANS (scale for assessment of Negative symptoms) were compared in both groups.

Group-A

- Treatment was CPZ 100 mg tablet twice daily orally +
- Risperidone 2 mg twice daily orally for 30 days

Group-B:

- CPZ 100 mg twice daily + Risperidone 2 mg twice daily
- Testosterone (sustanon) 100 mg 1 ampule Intra muscular
- Dose

Regular follow up of patient in the OPD on regular / periodic basis (every 8th day from starting of treatment)

Duration of study was July-2020 to June-2021.

Statistical analysis:

Different scores in both groups were compared by t test. The statistical analysis was done in SPSS software.

RESULTS

Findings

BRPS (brief psychiatric rating scale) score in group-A was 22.15% and group-B was 35.32%, SPAS (Scale of Assessment positive symptoms) score in group-A was 20.32% and group-B was 32.1%

SANS (scale of Assessment of Negative Symptoms) score were 21.22 in group-A, 45.40% in group-B.

[Table 1] BPRS (brief psychiatric rating scale) values in group-A was 22.15 (±1.2) and in group 35.32 (±1.5) t test was 7.8 and p<0.00.

[Table 2] SAPS (Scale of Assessment positive symptoms) group-A value was 20.32 (±1.2) and group-B were 32. (±1.8) t test was 7.9 and p<0.001.

[Table 3] SANS (scale of Assessment of Negative Symptoms) group-A values was 21.22 (±1.8) and group-B value was 45.40 (SD±3.2) t test was 6.5 and p<0.001.

Table 1: Comparison of BPRS (Brie Psychiatric Rating Scale) scores in both groups

Group	Values (%)	t test	p value
A	22.15 (±1.2)	7.8	P<0.001
B	35.3 (±1.3)		

In Brie Psychiatric rating scale P value is highly significant (p<0.001)

Table 2: Comparison of SAPS (scale for Assessment of positive symptoms) in both groups

Group	Values (%)	t test	p value
A	20.32 (±1.2)	7.9	P<0.001
B	32.1 (±1.8)		

Scale for assessment of positive symptoms study p value is highly significant (p<0.001)

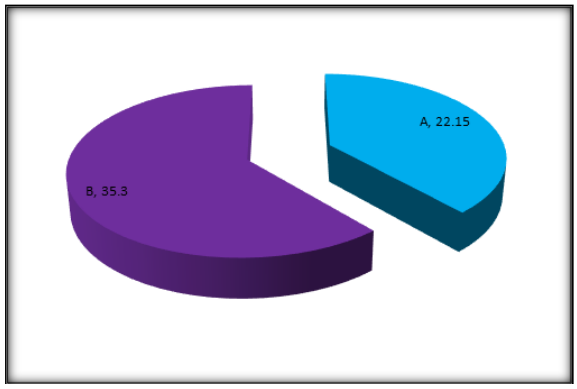

Figure 1: Comparison of BPRS scores in both groups

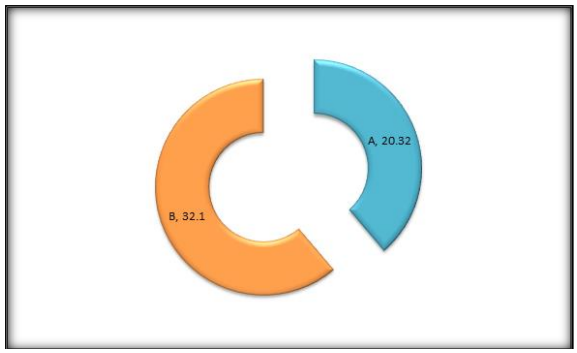

Figure 2: Comparison of SAPS in both groups

Table 3: Comparison of SANS (scale for assessment of Negative symptoms) scores in both groups

Group	Values (%)	t test	p value
A	21.2 (±1.8)	6.5	p<0.001
B	45.40 (±3.2)		

In the assessment of negative symptoms scale is highly significant (p<0.001)

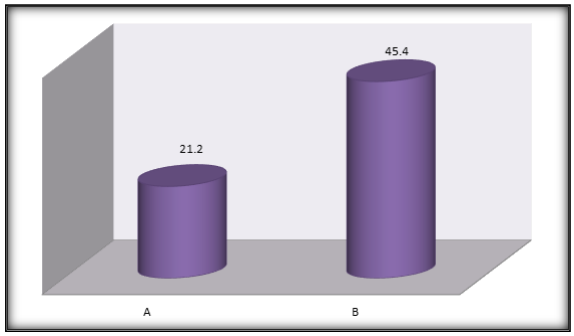

Figure 3: Comparison of SANS scores in both groups

DISCUSSION

In the present of role of testosterone in treatment of schizophrenia and its interaction with antipsychotic drugs, CPZ and Risperidone The findings were BRPS score in group-A was 22.5% and in group-B was 35.32% in SPAS score – group-A value was 20.32% and 32.1% in group-B, SANS score in group-A was 21.22% and 45.40% in group-B [Table

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1]. These findings are more or less in agreement with previous studies.[9,10,11,12]

It is reported that, relationship between onset of puberty and onset of schizophrenia are to be considered. The onset of the schizophrenia has greater impact on gonadal maturity and its secretion.[13] Hence schizophrenic has lesser secretion of testosterone. Schizophrenia has slightly higher prevalence in men than women and more pronounced and less treatment responsive. Men with schizophrenia, display increases in negative symptoms severity with low testosterone levels.[14,15] Recent studies have shown that, exogenous testosterone supplementation may reduce negative symptoms in men with schizophrenia.[16]

Correlation studies have suggested a relationship between endogenous concentrations of Dehydroepiandrosterone (DHEA) and depression, anxiety spectrum disorders, schizophrenia and dementia.[17,18] Hence schizophrenia is linked to alteration in DHEA.[19]

Schizophrenia has multi-factorial disorders due to hypo-activation of brain. Emotion, cognitive behaviours related to frontal lobe and limbic system. It is also reported that inferior frontal gyrus activity is correlated to peripheral testosterone level in men. Circulating testosterone levels are inversely related to activation in middle frontal gyrus and left insula during emotional response inhibition task in men with schizophrenia.[20] It is hypothesized that, optional levels of testosterone are needed for normal neural functioning.

CONCLUSION

In the present comparative study between CPZ and Risperidone and CPZ, Risperidone and testosterone have proved that, testosterone hormone has greater impact to suppress negative symptoms of schizophrenia. As testosterone is a steroid hormone its physiological significance, mechanism of action and possible roles in human diseases are not well understood. Hence this study demands hormonal assay in any mental disorder patients of both sexes.

Limitation of study

Owing to lack of funds and non-availability of instruments genetic, hormonal and bio-chemical analysis could not be performed.

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