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ORIGINAL ARTICLE

D-Chiro Inositol in Lowering Androgen Levels in Pcos Patients

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ABSTRACT

Background and objectives: PCOS affects the endocrine, metabolic, and reproductive systems, resulting in the production of cysts in the women who have it. When provided, D-chiro inositol, a new therapeutic agent, has the potential to enhance the patient's endocrine profile. D-Chiro Inositol is being tested in a new trial to see how well it will help individuals with PCOS reduce their androgen levels.

Methodology of the study: This randomised trial took place in the Department of Medical Sciences' outpatient department from June 2020 to March 2021. A random number generator was used to divide 50 women with polycystic ovarian disorder into two groups of 25 each. While another group found a placebo supplement, one received D-Chiro Inositol (600mg per day). A number of androgens were assessed at the start of treatment and again eight weeks later, including LH, FSH, and testosterone. An independent sample T test was used to compare the therapy effects after eight weeks, with a P value of less than 0.05 declared statistical significance.

Results: D-Chiro Inositol (D-Chiro Inositol) was shown to be more effective than placebo for patients aged 28.8 to 30.9. D-Chiro Inositol women had a mean BMI of 25.73.6 kg/m2, while placebo women had a BMI of 25.84.2 kg/m2. Testosterone levels in the D-Chiro Inositol group were 78.48 ng/dl, 14.74 microIU/ml, and 10.19 microIU/ml, respectively, while these values were 17.22 microIU/ml, 13.03 microIU/ml, and 86.08% in the placebo group. There was a statistically significant difference between the two treatment groups (P value 0.05). D-Chiro Inositol seems to be an effective treatment for polycystic ovarian syndrome since it has the capacity to reduce testosterone levels.

INTRODUCTION

Polycystic ovarian syndrome (PCOS) is a hormonal disorder characterised by ovarian dysfunction that affects the ovaries. Pregnant ladies are affected. Identifying this disorder is achievable when two or more ultrasound features are present, such as hyperandrogenism, ovulatory failure, or polycystic ovaries. In the reproductive years of females, it is found in between 5 and 20 percent of the population. A recent research has shown that inositols may help reduce the endocrine and metabolic abnormalities that is often linked with PCOS[2, 6].

D-Chiro Inositol has been studied extensively in females with PCOS by a wide number of researchers. LH, FSH, and testosterone[2, 8, 11], as well as other endocrine parameters, are improved by D-Chiro Inositol, which also possesses anti-aging characteristics. A correlation between D-Chiro Inositol's influence on female body weight and female body weight has been established.3 The National Institutes of Health found decreased insulin and free testosterone levels in thin women with a body mass index of 20.02-24.4 kg/m2. D-Chiro Inositol has been shown to lower insulin and free testosterone levels. Research shows that it enhances the frequency with which an egg is fertilised. Overweight women with PCOS have unusually high concentrations of the gonadotropin-releasing hormone (GnRH), androstenedione, and the LH response (GnRH). The BMI is also reduced, and insulin sensitivity is improved[2, 14].

D-Chiro Inositol has been the subject of extensive worldwide study in the treatment of PCOS. But there is a lack of evidence on the effectiveness of this drug in Pakistan. D-Chiro Inositol has been shown to reduce androgen levels in women with polycystic ovarian syndrome, therefore the current research aims to investigate how successful it is (PCOS). This new therapy's potential benefits in lowering morbidity will also help to raise awareness among treating doctors about this new therapy's advantages.

METHODOLOGY

During the months of June 2020 to March 2021, the Department of Medical Sciences' outpatient clinic was used to perform this randomised investigation. In this research, 50 women between the ages of 18, and 45, who had at least two of three of the following characteristics: hyperandrogenism (as demonstrated clinically by hirsutism), anovulation, and the presence of polycytic ovaries on ultrasound, were included.. Informed permission was obtained from all individuals before to participation in the research, which was approved by the hospital's ethics committee. Prior to enrolment, patients with polycystic ovarian syndrome or hypothyroidism or excessive prolactin levels were excluded from the research.

LH, FSH, and testosterone were measured and documented after the patients' demographic information had been recorded. D-Chiro Inositol (600 mg/day) and a placebo were given to 25 female volunteers in each of two treatment groups for eight weeks, which were randomly allocated in accordance with eligibility requirements. To ensure that each group had an equal number of participants, a computer-generated table was used to generate random numbers for each group. Upon completion of all screening examinations, the patients were separated into groups and the procedure was repeated. As a way to prevent the allocated therapy from being disclosed to the investigator, a research pharmacist performed

randomization without his or her involvement. The D-Chiro Inositol or placebo pills were given by the manufacturer in containers that were coded for delivery. The experiment was halted because the placebo, a B-complex vitamin, was shown to have no effect on testosterone levels. An eight-week follow-up period followed by statistical analysis was used to compare the re-measured levels of LH, FSH, and testosterone to the initial measurements.

In order to analyse the data, we used SPSS version 17.0. Mean and standard deviation were calculated for quantitative variables such as age, body mass index (BMI), LH, FSH, and testosterone in order to establish their statistical significance. It was estimated as a percentage and frequency for statistically significant qualitative data such as obesity and diabetes. When analysing the data, researchers took into account a person's age, weight, and whether or not they had diabetes. a rethinking of the organization's goals It was determined that a P value of less than 0.05 was statistically significant in order to deal with the effect modifiers. This study employed an independent sample T-test to compare the outcomes of the two treatment options. P values below 0.05 were taken into consideration to be significant for this study.

RESULTS

This study included a total of 50 women who had been diagnosed with PCOD. D-Chiro Inositol's treatment group had an 8-year standard deviation in mean age, compared to a 30-year standard deviation for the placebo group. Girls in the D-Chiro Inositol group had a mean BMI of 25.73.6 kg/m2 compared to 25.84.2 kg/m2 for females in the placebo group. At baseline, the levels of LH, FSH, and testosterone in individuals who did not receive treatment were 18.6 microIU/ml, 13.59 microIU/ml, and 90.7 microIU/dl, respectively. There were 17.72 microIU per millilitre of levothyroxine (LH), 13.6 microIU per millilitre of follicle stimulating hormone (FSH), and 89.04 nanograms per deciliter of testosterone in the placebo group. When given D-Chiro Inositol, 11 (44 percent) of the 25 female patients saw weight loss, while five (20 percent) developed diabetes; by contrast, only 10 out of the 25 female patients who received a placebo experienced weight loss, while only four (16 percent) developed diabetes. Compared to the placebo group, the D-Chiro Inositol group had LH, FSH, and testosterone levels that were 14.74 microIU/ml, 10.19 microIU/ml, and 78.48 ng/dl, respectively, after eight weeks.

Table 1: features of 50 females

	Group i		Group ii	
Charac				
	Baseline	After	Baseline	After
Age	29±9		30±9	
Bmi	26.6±3.7		25.8±4.2	
Obs	12 (43%)		10 (40%)	
Dm	6 (21%)		4 (16%)	
Lh	19.6±4.8	14.74±4.52*	17.72±3.31	17.22±3.99
Fsh	13.59±3.2	10.19±3.03**	13.6±2.96	13.03±3.02
Testosterone levels	91.7±13.80	79.47±24.4***	90.04±14.75	86.08±18.23

0.05. (P value less than 0.05).

* P=0.04 after a comparison to a placebo group

** P=0.002 as compared to a placebo group

*** P=0.03 as compared to the control group

We conducted an independent sample t-test to see whether the two groups differed. Treatment with D-Chiro Inositol reduced levels of androgens such as LH, FSH, and Testosterone substantially more effectively than a placebo. Age, obesity, and the prevalence of diabetes were used to categorise the data. Chi square tests were performed to examine the impact of these modifiers on the treatment outcome after stratification. The treatment result was not affected by any of these factors, which was shown to be statistically insignificant p value.

DISCUSSION

D-Chiro Inositol (DCI) is a safe and effective treatment option for women with polycystic ovarian syndrome (PCOS). As a result, it aids in a woman's ability to conceive as well as her ability to digest food. In this study, D-Chiro Inositol was specifically studied for its effects on LH, FSH, and testosterone levels in females with polycystic ovarian syndrome (PCOS). The D-Chiro Inositol group had considerably lower levels of LH, FSH, and testosterone than the control group, and this difference was statistically significant.

Women with PCOS were studied in 2015 by Antonio Simone Lagana to see how DCI affected their ovaries and metabolism. As an extra supplement to their daily doses of prescribed drugs, the patients received 400 micrograms of folic acid and one gramme of DCI every day for six months. Dietary supplements were used to examine treatment effects on BMI, blood pressure (both systolic and diastolic), blood levels of LH and FSH, free and total testosterone, androstenedione, and prolactin, as well as monthly regularity. In the presence of D-Chiro Inositol, blood levels of LH, FSH, free and total testosterone, as well as androstenedione and prolactin, were all lower2. The researchers found a statistically significant return to normality in the menstrual cycle after the administration of their drug. It was shown that D-Chiro Inositol had similar effects on LH, FSH, and testosterone levels as previously observed. Other endocrine markers were not examined in this study, and no evidence was found of an impact on blood pressure or menstrual cycle regularity. As a consequence, further work in this area is needed.

CONCLUSION

In conclusion, polycystic ovarian syndrome may be treated with D-Chiro Inositol, according to a series of researches. It is a therapy option for those with PCOS since it improves their hormonal profile. There is still a need to investigate larger sample size and undertake experiments with some more statistical power to better understand the outcomes of patients treated with d-chiro inositol, notwithstanding the current study results.

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