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A Hormonal Study in Psoriatic Female Patients in Tertiary Care Hospital Of South India.

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ABSTRACT

Psoriasis is a condition where there is continuing frequent reddish patches enclosed with silver white scales. It is a complex autoimmune condition. About 0.4-2% of population is affected with psoriasis in India. The Psoriasis appearance varies among ages of 15 to 20 years while the additional peak arises at the ages of 55–60 years. The ailment incidence has a tendency to top throughout puberty, postpartum and menopause however throughout pregnancy patient status recovers. The endogenic features like hormonal variations may induce psoriasis. Hormonal imbalance is seen at every vital stage of female life, these hormonal changes lead to induction and worsen prevailing psoriasis. The main objective of the study is to correlate levels of hormone estrogen, progesterone and testosterone in women affected by Psoriasis during treatment. Study comprised of 100 femalePsoriasis patientsalong with age matched healthy controls using convenience sampling method. The study results showed Statistically substantial spiraling of serum estrogen and progesterone was detected in cases in contrast to controls. Serum Testosterone was observed to be statistically significantly declined in cases in comparison to controls. The treatment modalities can be tailored to individual patient so that patient gets the appropriate mitigation of disease.

Keywords: Estrogen, Progesterone, Testosterone, Psoriasis

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INTRODUCTION

Psoriasis is the utmost predominant immune intermediated skin ailment in adults[1]. In India about 0.4-2% of population is affected with psoriasis [2]. The frequency of psoriasis is assessed to be nearly 0.5~8.5% of the global populace [3]. The Psoriasis appearance varies among ages of 15 and 20 years while the additional peak arises at the ages of 55–60 years [4]. The ailment incidence has a tendency to top throughout puberty, postpartum and menopause however throughout pregnancy patient status recovers [5]. The endogenic features like hormonal variations may induce psoriasis [6, 7].The occurrence of psoriasis differs significantly based on race, topographical position, inheritances, and ecological factors[8]. Racial features impact the occurrence of psoriasis significantly; it is observed that psoriasis in Samoan population is 0% where as in Arctic Kasach'ye it is 12%. Northmost regions of Soviet Union and Norway is 5-10%. In UK, USA, and Holland it is 2-3%. Latin American Indians, Mongoloids, and Western Africans and North American Indians it is 0-0.3%. in Asian countries it is, 0.4–2%[9-17].

Psoriasis can be seen in the extensor part of the body, usually characterized by erythematous, crusty patches, and plaques, it is a chronic inflammatory skin ailment. The average age group of psoriasis cases is about 26.94 ± 14.94 years, the prevalence is seen both in females and males[10].

Even though, Pathogenesis of psoriasis is not been fully understood, it is extensively believed that the interleukin (IL)-23/IL17 is the main factor in the pathway of development of psoriasis, specifically in plaque-type psoriasis. Psoriasis has a broad symptom ranging from epidermic scales to thickening of vascular erythematous which is accompanied by hyperproliferation of epidermis, anomalous differentiation of keratinocyte, blood vessel expansion along with angiogenesis, and the presence of inflammatory cells in the superficial dermis and epidermis. Studies till date recommend that genetic, metabolic, and immunologic aspects show significant part in the pathogenesis of psoriasis [18-21].

Studies have shown that psoriasis is activated by endogenic factors like changes in hormones, especially in women severity of psoriasis is predisposed by life cycle and is more frequent in puberty, postpartum and menopause, whereas pregnant women tend to be less affected [22].

Large Estradiol and progesterone produced during menstrual cycle shown to have anti-inflammatory action. During pregnancy as well there will be large production of estriol and PG, which leads to enhancement of conditions in most of the psoriasis patients. In post-delivery the condition worsens during initial months and increases spreading of psoriasis to other parts of the body. Studies have revealed negative association among the levels of estrogen and spread of psoriasis. Less inhibin and estrogen is produced by the aged follicles in perimenopause women, and there will be increase in the levels of follicle stimulating hormones and decrease in the levels of estrogen, which leads to increase in psoriasis [23-28].
Prolactin stimulates immunity, high levels of prolactin is observed in psoriasis as well as in various clinical conditions. Levels of prolactin is related to severity of psoriasis. Various studies have shown decreased levels of estrogen in females with psoriasis in comparison with controls [29-32].

In Every stage of female there will be hormonal disorder, these hormones may activate or even intensify prevailing psoriasis. Psoriasis is affected by hormones in the serum. Estrogen and progesterone's anti-inflammatory consequence are well known. The role play of sex hormones estrogen, progesterone and testosterone needs to be demonstrated in the pathogenesis of the disease.

The present study is carried out in a tertiary care hospital in Tumkur, India. The present study aims to correlate levels of hormone estrogen, progesterone and testosterone in women affected by Psoriasis during treatment.

MATERIALS AND METHODS

The study was conducted in tertiary care hospital. Present study is a prospective observational study. Age matched case control study was carried out using convenience sampling method.

Ethical clearance was taken for study in accordance with the ethical standards of the institutional ethics committee on human experimentation and with the revised Helsinki Declaration well before the

start of the study wide certificate RefNo: SSMC/MED/IEC-139/April-2024. The informed consent was taken from all the subjects included in the study.
Study Participants: 100 female Psoriasis patients along with age matched healthy controls.

Informed consent procedure: written consent

Sample Collection and processing: 5 ml venousblood ofdiagnosed female psoriasis patients attending to Dermatology OPD of SSMC, Tumkur.

Inclusion Criteria

- Age between 15 to 60yrs with Diagnosis of Psoriasis
- Patient who has consented for the procedure.

Exclusion Criteria

- Patient who refuses to participate or consenting for the study.
- Patients who are lost to follow up.
- With other dermatological affections

Duration of the study: One year

Study was conducted with 100 female Psoriasis patients along with age matched healthy controls. serum levels of sex hormones like estrogen, progesterone and testosteronewere estimated.

The test was conducted according to the instruction provided by the kit (Lilac Monobind USA). Assay was performed on 96- well plate. Each time the test was performed, the standards of known concentration, control and specimen sample were loaded in the plate and test was done according to the instructions in the manual of the kit. The ELISA plate was read at 450nm wavelength in aELISA microplate reader (Labman, Bengaluru, India). The levels of hormones were quantified with standard curve obtained by standards of known concentrations provided in the kit.

The data was entered in excel spread sheet. Data cleaning and validation was done and analyzed using Statistical Package for Social Sciences (SPSS-Version 20). All variables were tested for normality with the help of Kolmogorov-Smirnov test. Data was presented as Mean and Standard deviation for continuous variables and as Median and Interquartile range for variables with high variance. Independent sample t-test was used to compare resulted for normally distributed data and for the non-normally distributed data, Mann–Whitney U-test was used. P-value < 0.05 was considered statistically significant.

RESULTS

Statistically substantial spiraling of serum estrogen and progesterone was detected in controls in contrast to cases.

Serum Testosterone was observed to be statistically significantly declined in cases in comparison to controls.

Parameter	Control	Cases	Mann-Whitney U	P-value
Estrogen(ng/ml)	0.82 (0.34 - 0.98)	0.49 (0.37-0.74)	929.5	0.027*
Progesterone(ng/ml)	0.77 (0.45 - 0.92)	0.59 (0.34 - 0.80)	963.5	0.044*
Testosterone(ng/ml)	0.64 (0.45 - 0.84)	0.47 (0.34 - 0.67)	875.5	0.010*

*P < 0.05 Statistically significant

Table 1: Comparison of parameters between cases and control groups.

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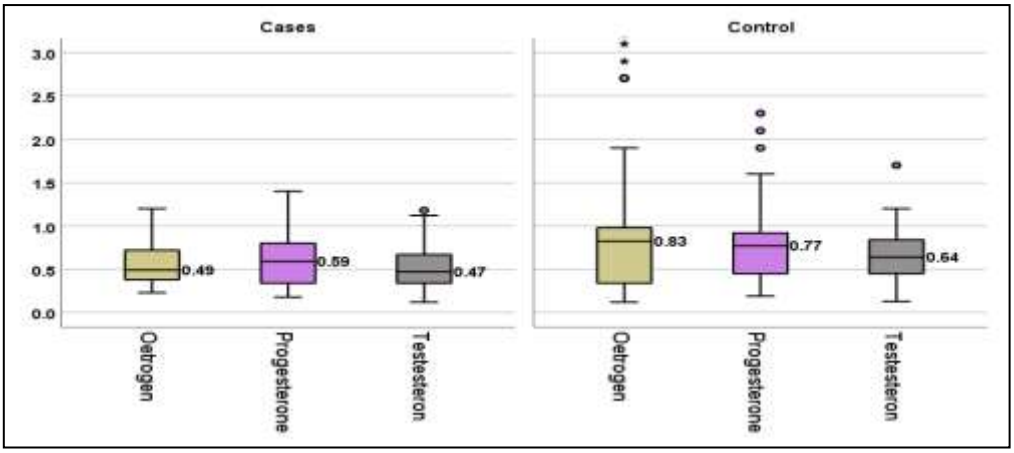

Figure 1: Graphical Representation of Results

Comparison of estrogen, progesterone and testosterone levels both in cases and control groups are tabulated in table 1. Data is represented as median and interquartile Range.

P < 0.05 Statistically significant. Figure 1 shows the graphical representation of levels of estrogen, progesterone and testosterone in cases and controls.

DISCUSSION

Estrogens produced in ovaries, characterize female hormones. They have a significant role in regulating women life cycle. Estrogens also play an important role in controlling immune cells. About 33-55% of pregnant women showed improved psoriasis conditions, during pregnancy large production of estriol and progesterone leads to enhancement of conditions in most of the psoriasis patients whereas in about 65% of postpartum period psoriasis patients showed increase of psoriasis and decreased levels of estrogen and progesterone. In perimenopause women, numerous hormonal changes appear which leads to menopausal shift, related to reduced production of ovarian inhibiting hormones which leads to reduced production of estrogen and progesterone [33].

In the present study we have observed that cases showed decreased levels of both estrogen and progesterone compared to control group, which is in accordance with the previous studies. Low Serum levels of E2 and low serum levels of progesterone are associated with psoriasis severity.

Estrogens mainly Estradiol, affect the severity of the Psoriasis by directly impacting inflammation and keratinocyte function as well as angiogenesis and oxidative stress responses [6].In fact, an increased production of estradiol and progesterone during the menstrual cycle has anti-inflammatory effect [7].Compared to the control cohort, total testosterone in psoriasis patients were significantly lower [8].

In the present study we have observed significant decrease in serum levels of testosterone in cases compared with controls. The study of Gleison Duarte *et al*. showed that psoriasis patients had decreased levels of total testosterone compared with controls, which correlate with the present study [34].

CONCLUSION

The present study was done to analyze the role of sex hormones estrogen, progesterone and testosterone in the pathogenies of the disease. The study showed significant decreased serum levels of estrogen, progesterone and testosterone in psoriasis patients compared to controls.

Therefore, Serum sex hormones can influence clinical manifestations of the psoriasis.This can lead to tailored therapeutic interventions to individual patient so that patient gets the appropriate mitigation of disease.

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