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# Clinicoepidemiological study of acne in age more than 25 years with respect to endocrinological evaluation

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ABSTRACT

**Background:** Acne being a common dermatologic disease of adolescents with its varied clinical presentation and recurrence, with relevance of up to 95% in all the population has been difficult to treat. It has been recognised as one of the conditions in Global Burden of Disease (GBD).
**Aims:** To study adult acne with clinical history and hormonal evaluation.
**Materials and Methods:** Patients over the age of 25 years presenting with acne in a tertiary care hospital were included in the study. A detailed history and examination was done, with factors such as alopecia, hirsuitism and menstrual irregularity. Hormonal Investigations and Ultrasound of abdomen and pelvis were done for all patients.
**Results:** Out of 30 patients included in the study 30 were women. The mean age of the patients was 32.52 years. Persistent acne was observed in 50%, while it was late onset in 50% with duration from 1 month to 25 years. Most common grades included grade II with 53%, grade III with 23.33 %, and grade I with 20%. Hirsuitism in 33.33% and alopecia in 6% was also seen. On further investigations it was found that Serum DHEA-S and Serum Testosterone were within normal limits, Prolactin increased in 13.33%, LH reduced in 6.66%, FSH increased in 6.66% and decreased in 3.33%, Fasting Insulin increased in 3.33%, Postprandial Insulin increased in 6.66%. Thyroid profile showed TSH decreased in 3.33%, T3 increased in 13.33% and T4 increased in 13.33%. Ultrasound findings of 26.66% patients were positive for PCOD.
**Conclusion:** Adult acne is predominant in females as compared to adolescent acne, with grade II acne being more predominant, the role of hormones in adult acne has yet to show its co-relation with the disease. Studies looking into end organ sensitivity would further help in understanding role of hormones in adult acne.



## 1. Introduction

Acne has been a common dermatologic disease of adolescence for many men and women throughout the world. With its varied clinical presentation it makes, it difficult to grade acne and treat it accordingly. It has been seen that there have been cases of up to 95% relevance with the disease at some point of an individual's life.[1] The presentation of acne depends on multiple factors. It's commonly seen in patients during the age group of adolescents and early adult life age (13-25).

There have been many studies contributing to the early onset of acne and its generally been accepted that the presentation is parallel to the onset at puberty, with varied degree of clinical presentation such as self limiting disease to severe requiring long term treatment.[2,3] The disease may undergo periods of remission and gushes in age groups of 20s and early 30s. Adult acne has been defined as occurrence of acne beyond the age of 25 years. This group of acne is further divided into persistent and delayed onset

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of acne. Acne that has continued beyond the age of 25 years is labeled as persistent acne. Acne developing after 25 years of age for the first time is labeled as late-onset or delayed acne. Persistent acne patient may also show premenstrual flare in female patient.

The disease has now been recognized as a global burden by the organization of Global Burden of Disease (GBD), with majority of the patients being in age group of 12-25 years.[4] Similarly, it was also recognized that the disease affecting the majority of females than males. On further review, it was revealed that among both genders, females are more likely to approach for treatment.[5–7] There are few studies about adult acne in Indian population and even fewer involving analytical studies of hormones.

## 2. Materials and Methods

The study was conducted in Department of Dermatology in outpatient department of a medical college in Central Maharashtra. Patients with the fulfilling criteria of acne over face, chest, back, shoulder with age group of above 25 years, were identified, and enrolled in the study. A detailed history and examination of the patient with hormonal investigations were done for each patient. Data collected involved factors including, age, sex, aggravating factors (sun, stress, seasonal variations, cosmetics, medications, premenstrual and menstrual flares), history of prior treatments, personal and family history, diet and weight gain, endocrinological history, obstetrics history. Acne was graded according to the severity into 4 different grades:

Grade 1: Comedones, occasional papules.

Grade 2: Papules, comedones, few pustules.

Grade 3: Predominant pustules, nodules, abscesses.

Grade 4: Mainly cysts, abscesses, widespread scarring.[8]

Investigations were done including FSH, LH, Serum testosterone(Total), Prolactin, DHEAS, Fasting and post meal insulin level, T3,T4,TSH, Ultrasound Pelvis (showing number of follicles and volume of each ovary). Clinical photographs for all the patients were included to monitor and assess the patient. The data collected was analyzed statistically.

## 3. Results

The study included a total number of 30 patients presenting with Adult acne coming to the OPD during the study period, all the patients were incidentally females. The mean age was found to be 32.53 years with eldest patient being 46 years and the youngest patient being 25 years. The duration of the disease varied from minimum of 1 month and 25 years. The average duration of the disease was found to be 4.3 years. The patients were assessed for persistent or delayed onset of acne, it was observed that 15 patients had persistent and the other half had delayed onset of acne. Majority of the patients had Grade II Acne (53%), followed by Grade III (23.33%), Grade I acne was found in 20% of patients, Only 0.3% had Grade IV acne. Premenstrual flare was seen in 60% (18) patients, 50% (15) patients had dysmenorrhea, Hirsuitism was seen in 33%(10) patients, Alopecia was seen in only 6%(2) patients.Figure 1

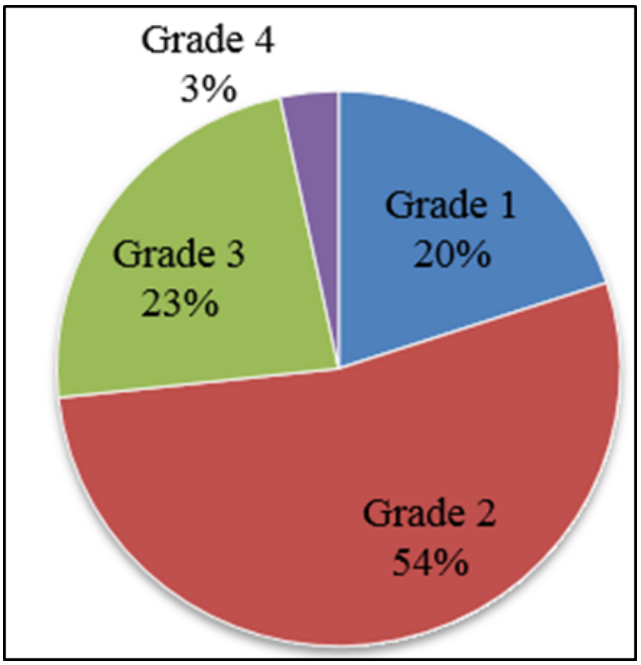


**Fig. 1:** Grades of acne

Laboratory investigations showed no significant abnormality in levels of total serum testosterone levels. Serum DHEAS was also found to be within normal limits for all patients. It was seen that a Prolactin was raised in 13.33% (4) patients. LH was decreased in 6.66% (2) patients. FSH was increased in 6.66% (2) patients and decreased in 3.33% (1) patient. Patients were also evaluated for Fasting and Post prandial Insulin levels. The fasting Insulin level was increased in 3.33% (1) patient, and post prandial insulin levels were increased in 6.66% (2) patients. Thyroid function test was done, Only 3.33 % (1) patient showed decreased TSH levels, T3 levels were increased in 13.33 % (4) patients and T4 levels were also increased in 13.33%(4) patients. Only 6.66% (2) Patients had both, increased T3 and T4, while the rest of findings were seen in patients who had either T3 or T4 raised.

Ultrasound of pelvis revealed that 26.66% (8) patients had polycystic ovaries.

The chi square value for TSH – 30.00, with p value- 0.000, which is < 0.05, so it is significant

The chi square value for LH- 14.933, with p value- 0.002, which is < 0.05, so it is also significant.

Values equa 1 to and above 0 05 are not considered significant.Figure 2

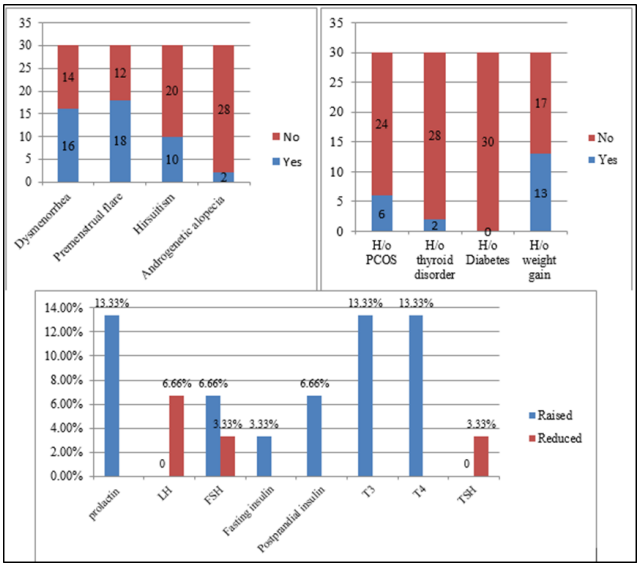


**Fig. 2:** The chi square test for our investigations revealed that TSH and LH were the only significant investigations with changes in p value.

## 4. Discussion

It is a common perception that acne is disease of adolescent and young adults. Contrary to this common ideation, acne is not infrequently encountered in patients above 25 years of age, a study done by Aditya B et al states that 9.4% adult patients were noted to have adult acne.[9] In our study 2 patients (6.66%) above 45 years of age were diagnosed with the same. A similar study conducted by Goulden et al reported findings of 12.5% patients with adult acne above 45 years and more common in women.[3] Incidentally all the patients enrolled in this study were also females, this may be due to increase awareness in females regarding acne. The possibility of role of androgens, serum testosterone requires more evidence, few studies have shown increased levels of serum testosterone and sex hormone binding globulin to be raised or also within normal limits.

Capitanio et al[10] had noted that another comedonal variant in post adolescent acne where the inflammatory lesions were limited but the large lesion were prominently cyst like comedones, spread over the whole face evenly with markedly absent over lower third of the face and jaw line region. It was also seen that smoking was major reason for such presentation in patients. In our study, all the patients were non-smokers. We had also seen that the most common sites for involvement of acne lesions were noted to be side cheeks, mandibular region and forehead region. This finding is similar to the western reports with adult acne lesions more common on lower face and mandibular area.

Majority of the patients had Grade II Acne (53%) i.e. inflammatory papules and pustules, followed by Grade III (23.33%), Grade I acne was found in 20% of patients, Only 0.3% had Grade IV acne. Study by Niti et al had shown that 12% patients presented with cystic acne,[1] but in our study only 0.3% patients were noted. Study by Goulden et al showed predominantly post adolescent acne. 16.66% patients also presented with lesions over back and chest along with involvement of the face.[3]

Goulden et al and other studies have also mentioned variable changes in levels of serum DHEAS (dehydroepiandrosterone sulphate), which shows androgen activities of ovaries and adrenal gland.[3,11–18] In another study by Aziawa et al., it was found that there were significantly higher values of adrenal testosterone and DHT in adult women with acne, when compared to women without the disease.[19] Chrousos GP et al conducted a study showing that adrenal androgens were not remarkably raised when compared to same age and sex in relation with normal controls further proving a weak correlation.[20] In our study, Laboratory investigations showed no significant abnormality in levels of total serum testosterone levels. Serum DHEAS was also found to be within normal limits for all patients. These findings have suggested that the role of end organ hypersensitivity might be more superior rather than the levels of androgens in the body.[21]

Inspite of multiple studies done, the cause for adult acne had not been proven or understood completely, as there is more involvement of female patients, it is thought to be due to colonization by resistant bacteria, cosmetics, stress, and hormones. There have been multiple studies mentioning the same, in the study done by Niti et al, the patients with adult acne are attributed to the role of hormones, with requirement of further evidence proving the proposed findings. Niti et al study, seen that 6.95% had hirsuitism, where as 2.17% had alopecia, pre menstrual flare up was seen in 11.7%, and only 3.04% women had increased laboratory markers of hyperandrogenism.[1] In our study Hirsuitism was seen in 33% (10) patients, Alopecia was seen in only 6%(2) patients, premenstrual flare was seen in 60% (18) patients, 50% (15) patients had dysmenorrhea. In study by Goulden et al,[3] there was at least one finding noted with feature of possible hyperandrogenism (37%), with premenstrual flare up in 84.8%.

In our study, ultrasound of pelvis was done which revealed that 26.66% (8) patients had polycystic ovaries. In a study by Betti R. et al it was found that 52-82% patients of adult acne had polycystic ovaries, but on further investigation of the hormonal profiles, were not co-relating with the classical polycystic ovary syndrome.[10]

## 5. Conclusion

Adult Acne is still a difficult entity to treat and also to understand the precipitating factors of this disease. The treatment can be varied upto the age of 35-40 years and even beyond, as there are very few studies of post adolescent acne. There are certain areas to be evaluated like, 1) why the

acne begins in adulthood or acne persists beyond adulthood, 2) why acne is more common in adult women compared to adult men, 3) exact factors causing acne and flaring of the disease in more than 25 years of age. We also found that the lesions in adult acne were predominantly involving the side cheeks and forehead region, 16.66% patients also presented with lesions over back and chest. These findings were similar to other Indian studies. The findings in this study have been inconclusive to prove the co-relation between hormonal levels and adult acne, further we should look forward to study the end organ sensitivity in order to prove the role of circulating androgens over adult acne, and multicentric trials are required to check the correlation.

## 6. Source of Funding

None.

## 7. Conflicts of Interest

There is no conflict of interest.

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