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Original Research Article

An observational study on clinico-hormonal profile of adult onset acne in females

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ABSTRACT

Background: Acne is a common chronic inflammatory dermatological disorder of pilosebaceous unit in adolescents, but surprisingly its incidence is increasing in adults. Adult onset acne is quite common in females and there is paucity of data on its clinico-hormonal profile. Our objective was to evaluate and study the clinic-hormonal profile in adult onset acne in females.
Methods: Patients over the age of 25 years were included in the study. A detailed history and examination along with hormonal investigations were done for each patient.
Results: Out of 24,266 outdoor patients attending Dermatology OPD during 5 months, 180 female patients with adult onset acne were included in the study and prevalence of Adult acne was 0.74%. The mean age was found to be 31.61 years. Majority of the patients had grade II acne (68.33%). Premenstrual flare was seen in 50% (90) patients, 21.11% (38) patients had dysmenorrhea, Hirsutism was seen in 30% (54) patients. Levels of total serum testosterone was markedly increased in 3 (1.66%) patients while serum prolactin in 2(1.1%) patients. Thyroid abnormalities were seen in (12.77%) 23 cases. LH:FSH ratio was deranged in 37 (20.56%) patients. The fasting Insulin level was increased in 4 (2.22%%) patients, Ultrasound of pelvis revealed 59 (32.77%) patients had polycystic ovaries.
Conclusions: Adult female acne is a complex multifactorial condition, different from teenage acne. Various hormonal imbalances can present as adult acne. So various endocrinological investigations to be carried out in adult onset female acne.

Keywords: Adult onset acne, Clinico-hormonal profile, Pilosebaceous unit

INTRODUCTION

Acne is a common chronic inflammatory dermatologic disease of pilosebaceous unit in adolescent age group.[1] Acne affects an increasing number of adult females, impairing quality of life, with significant negative psychological effect and social impact. Adult female acne (AFA) is defined as occurrence of acne in women over the age of 25 years and may persist continuously or intermittently from adolescence (persistent acne) or manifest for the first time in this period (late onset acne). A third type has also been suggested, called recurrent acne that is present in adolescence, improves for a variable period of time, and returns in adulthood. It is found that genetic and hormonal factors contribute to the pathogenesis of AFA, characterized by chronic evolution, requiring maintenance treatment, in some cases for years.[2] The disease is regarded as a global burden by Global Burden of Disease (GBD) organization, with common age of presentation being 12-25 years.[3] Similarly, it was also observed that the disease was seen in mostly females than males.[4]

Etiopathogenesis

There is a complex interaction between the main factors such as: genetic predisposition; androgenic hormone stimulation leading to an increase in sebaceous secretion; alteration of the lipid composition; follicular hyperkeratinization; bacterial colonization mainly by *Propionibacterium acnes* (*P. acnes*) and periglandular dermal inflammation. Currently, inflammation is considered a key component and can be detected in apparently non-inflammatory acneic lesions such as comedones and even in perilesional areas, without lesions (subclinical). Several triggers or aggravating factors, such as: exposure to ultraviolet radiation, stress, obesity, diet, smoking, sleep disorders, cosmetics, medications, excessive skin washing, possible resistance to *P. acnes* and endocrine deficiency diseases may be present. Autoinflammatory syndromes associated with acne may share common pathogeneses, involving dysregulated immunity with abnormal interleukin-1 signaling, leading to clinically significant inflammation. Thyroid autoimmunity has been found in a number of chronic inflammatory skin conditions like acne vulgaris and chronic idiopathic urticaria.[5]

In females with PCOS, hyperinsulinemia and peripheral insulin resistance occur frequently. Thus, in adult female with acne and PCOS, it is important to evaluate the possibility of glucose intolerance. Role of androgen in etiopathogenesis of acne is not well understood. Testosterone, dehydroepiandrosterone sulfate (DHEA) and dihydrotestosterone (DHT) stimulate sebaceous gland growth and sebum production, while Estrogens inhibit the secretion of androgens and inhibits sebaceous gland function. Estrogen/androgen ratio determines the activity of sebaceous gland.

In relation to AFA and hormones, the following are outstanding: increased sensitivity of the sebaceous gland to androgenic hormones; increased peripheral hormonal conversion; worsening of the disease in the premenstrual period, as well as in premenopausal, pregnancy and during the use of progestin-only contraceptives.

There are few studies on adult acne in Indian population and even fewer on hormonal profile. The present study was conducted to find out correlation of various clinico-hormonal factors and adult acne in females.

METHODS

The study was conducted in outpatient Dermatology Department of Chhattishgarh Institute of Medical Sciences Bilapsur, Chhattisgarh. Study was conducted between May 2023 to September 2023. Approval had taken from Institutional Ethics Committee. Total 24,266 patients attended during study period and 180 female patients with acne over face with age above 25 years were identified and included in the study. A detailed history and examination along with hormonal investigations were done for each patient. Females with history of prior treatment, undergoing any medications, acne over other body parts, lactating and pregnant females were excluded from our study. Data collected were age, aggravating factors (premenstrual and menstrual flares), history of prior treatments, personal and family history, endocrinological history and obstetrics history. Acne was graded according to the severity into four different grades.[6]

Grade 1: Comedones, occasional papules; grade 2: papules, comedones, few pustules; grade 3: predominant pustules, nodules, abscesses; grade 4: mainly cysts, abscesses, widespread scarring.

Investigations were done including FSH, LH, serum testosterone (total), serum prolactin, fasting insulin level, thyroid profile, ultrasound pelvis (showing number of follicles and volume of each ovary). The data collected and was analyzed statistically by Epi Info and Microsoft Excel.

RESULTS

Out of 24,266 outdoor patients attending Dermatology Department of our Medical College during 5 months, 180 female patients with adult acne were included in the study and prevalence of adult acne was 0.74%. The mean age was found to be 31.61 years with the oldest patient being 45 years and the youngest patient being 25 years. Age wise distribution of adult acne is shown in (Figure 1).

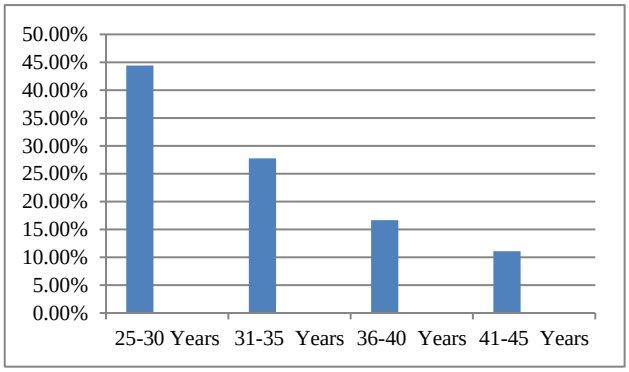

Figure 1: Age wise distribution of acne in adult female patients.

The duration of the disease varied from 1 month to 6 years. The patients were assessed for persistent and late onset of acne, it was observed that 154 patients had persistent and the 26 had late onset of acne. Majority of the patients had grade II Acne (68.33%) shown in Figure 2, followed by grade I (17.78%), grade III acne was found in 7.78% of patients, only 6.11% had grade IV acne (Figure 3). Common lesion were comedones mainly presenting over the mandibular and cheek region. Scaring was seen in 6 (3.33%) patients. Premenstrual flare was seen in 50% (90) patients, 21.11% (38) patients had

dysmenorrhea, Hirsutism was seen in 30% (54) patients. Laboratory investigations showed significant abnormality in hormonal profile. Levels of total serum testosterone was markedly increased in 3 (1.66%) patients while serum prolactin in 2 (1.1%) patients. Thyroid abnormalities were seen in (12.77%) 23 cases. LH:FSH ratio was deranged in 37 (20.56%) patients. The fasting Insulin level was increased in 4 (2.22%%) patients, ultrasound of pelvis revealed 59 (32.77%) patients had polycystic ovaries.

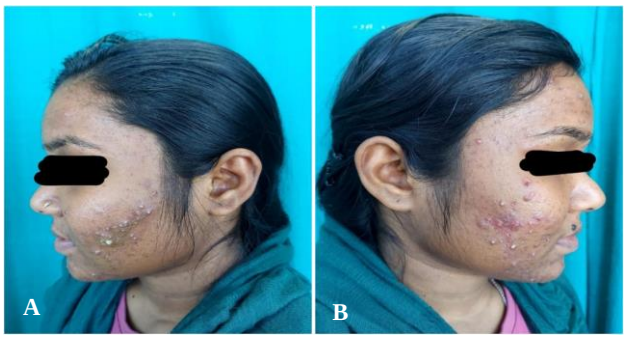

Figure 2 (A and B): Grade II acne which includes papules, comedones, and pustules.

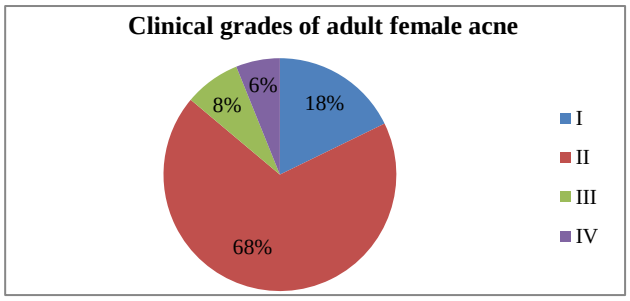

Figure 3: Grade wise distribution of adult acne.

DISCUSSION

Acne vulgaris is a common dermatological disorder of adolescent and young adults. The peak age of incidence in male is 16-19 years, while it is 14-17 years in females.[1] Acne vulgaris is not so uncommon in patients above 25 years of age. Despite of its increasing prevalence there are very few studies on adult acne. In addition to this there are multiple clinicoepidemiolgical factors such as hormonal imbalance, polycystic ovary syndrome (PCOS), regular use of cosmetic products in female henceforth our study population was female only.

In our study we observed that adult acne accounts for 0.74% of total patients attending our OPD similar to 0.83% prevelance seen in a study by Rajegowda et al.[7] In contrast to our study, 0.38% and 9.4% were seen in studies by Khungar et al and Adityan et al which may be due to geograpghical differences. In our study no patients were above 45 years of age were seen with adult acne which is in contrast to Goulden et al who reported 12.5% patients with adult acne above 45 years.[8-10]

Mean age in our study was 31.61 years, majority were in the age group of 25-35 yrs as compared to 30.19 yrs and mostly being 26-30 yrs in a study conducted by Rajegowda et al.[7] Comedones were the predominant lesion in most of the patients in our study mainly seen over the mandibular and cheek regions, similar observations were seen in a study by Capitanio et al[11]where cyst like comedones were the main presentation involving majorly upper part of the face.

We observed grade II acne (68.33%) in majority of the patients followed by grade I (17.78%), grade III acne (7.78%) and grade IV acne (6.11%). Similar findings were observed in a study by Iqbal et al with grade II Acne (53%) i.e., inflammatory papules and pustules, being the most common type followed by grade III (23.33%), grade I acne (20%) and grade IV acne in (0.3%) patients.[12]

The etiopathogenesis of adult acne being complex, multifactorial, thus several predisposing factors responsible for its causation. Many studies have implicated that deranged hormonal profile including thyroid profile, hyperandrogenism, insulin resistance, cosmetics and stress may be precipitating factors. Hyperandrogenism is considered as one of the major contributing etiological factor of adult acne, henceforth we look for signs of hyperandrogenism clinically and by investigative methods.[13] We observed hirsutism in 30% patients as a common clinical predictor of hyperandrogenism in our patients. Premenstrual flare was seen in 50% patients which is similar to 46% and 44% seen in studies conducted by Swathi et al and Stoll et al respectively.[14,15]

Deranged hormonal profile were seen in 38.33% patients in our study among which three patients had markedly increased serum testosterone level, while two patients had increase level of serum prolactin in contrast to no changes in serum prolactin in the study by Zhang et al.[16] In our study raised fasting insulin level were seen 2.22% patients which was lower than 8% patients in a study by Abrol et al.[17] Thyroid abnormalities were seen in 12.77 % cases. Raised LH/FSH ratio is a pathophysiological feature of PCOS.[18] LH:FSH ratio was deranged in 20.56% patients. Ultrasound of pelvis revealed 32.77% patients had polycystic ovaries as compared to the study by Rajegowda et al where LH:FSH ratio was deranged in 29.3% patients, fasting insulin level was increased in 8% patients and in 38.7% USG findings of PCOD were found.[7]

Limitation

Dietary pattern, smoking, stress, cosmetic products and other aggravating factors were not observed. Large study sample is required and more studies will be conducted to establish association between deranged hormonal profile and adult acne.

CONCLUSION

Adult female acne is a complex multifactorial condition, different from teenage acne. Various hormonal imbalances can present as adult acne. So various endocrinological diseases needs to be considered and investigated while managing adult acne. Additional studies are needed to provide more evidence.

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