# Adolescent and late onset acne in females a comparative clinico-investigative study

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**بسم الله الرحمن الرحيم**

**" سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم "**

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# Abstract

**Background:** Although acne vulgaris affects mainly adolescents, there is a significant portion of females suffering from acne at & above the age of 25. Hormones play an important role in the pathogenesis of acne and females are usually subjected to an imbalance of hormones that stimulates the sebaceous gland and triggers acne. Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in females and is commonly associated with dermatologic manifestation of hyperandrogenism such as hirsutism, acne vulgaris & androgenetic alopecia.

**Aim of the work:** To compare the clinical features of facial acne in adolescent & adult females. In addition, this study aimed to investigate associated hormonal abnormalities and/or underlying PCOS in those patients.

**Materials & Methods:** Forty female patients with facial acne were enrolled in this study. Twenty patients were below the age of 25 (adolescent group) and twenty patients were at & above the age of 25 (adult group). The patients were subjected to medical history, clinical examination, assessment of blood hormonal levels namely total testosterone, prolactin, FSH, LH, estrogen, progesterone using ECLIA technique & free testosterone using RIA technique together with ovarian U/S.

**Results:** All face regions were affected in both adolescent and adult cases with acne, however, forehead & cheeks were significantly affected in adolescent when compared to adult cases. Total number of acne lesions was higher in adolescents than adults but this was statistically insignificant. Pustular acne morphology was significantly seen in adolescent compared to adult cases. Different abnormal blood hormonal levels were detected in 60% of total cases. Elevated levels of total testosterone, prolactin, progesterone and LH were detected in 12.5%, 17.5%, 17.5% and 20% of total cases respectively. Elevated total testosterone level was detected in 15% of adolescent cases compared to 10% in adult cases. Significant elevation of prolactin and LH levels were detected in 25% of adolescent cases compared to 10% & 15% in adult cases respectively. Significant elevation of progesterone level was detected in 30% of adult cases compared to 5% of adolescent cases. PCOS was detected in 30% of adolescent cases compared to 15% of adult cases.

**Conclusion:** Different clinical features and hormonal abnormalities may exist between adolescent and adult females presenting with facial acne. PCOS has a more common prevalence with adolescent acne compared to adult acne. Proper detection of associated disorders may help in the proper selection of treatment for female patients presenting with acne.

**Key words:** Acne- Females- Hormones- Polycystic ovary syndrome (PCOS).

## List of abbreviations:

| | |
|---|---|
| ACTH | Adrenocorticotropic hormone |
| AHA | Alpha hydroxy acid |
| ALA | Aminolevulinic Acid |
| ART | Assisted Reproductive Technology |
| DHEAS | Dehydroepiandrosterone sulfate |
| DHT | Dihydrotestosterone |
| ECLIA | Electrochemiluminescence immunoassay |
| FFA | Free fatty acid |
| FSH | Follicle stimulating hormone |
| GI | Gastrointestinal |
| IGFs-1 | Insulin like growth factor-1 |
| IL-1 | Interleukin-1 |
| INH | Isoniazid |
| LH | Leutinizing hormone |
| n | Number |

| | |
|---|---|
| OCPs | Oral contraceptive pills |
| P.acnes | Propionibacterium acnes |
| PCOS | Polycystic ovary syndrome |
| PMNLs | Polymorphonuclear leukocytes |
| PRL | Prolactin |
| PSU | Pilosebaceous unit |
| RIA | Radioimmunoassay |
| SHBG | Sex hormone binding globulin |
| TCA | Trichloroacetic Acid |
| TLR-2 | Toll like receptor-2 |
| TNF | Tumour necrosis factor |
| U/S | Ultrasound |
| UVA | Ultraviolet A |
| Y | Years |

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# Introduction

Acne is a common inflammatory skin disorder affecting both genders and all ethnic groups. In fact, acne affects at least 80% of adolescents and young adults to some degree. Researches show that a large number of women over 25 years old have acne and the prevalence of acne remains constant until approximately age of 44 , at which time there is a decrease in its incidence **( William C & Layton AM, 2006)**.

Acne is a disorder that involves the pilosebaceous unit causing the characteristic skin lesions; comedones, red papules, pustules, red nodules, cysts and in some cases scarring. The number and the proportion of those lesions are negatively correlated to the age of onset of acne **(Choi CW et al., 2011)**.

Although the cause of acne is multifactorial; environmental, familial, dietary, drugs, cosmetics, stress and endocrine abnormalities, studies are more focused on the hormonal factors as being related to acne. Whether during puberty, menstruation, pregnancy or menopause, the human body is subjected to an imbalance of hormones that play their role in stimulating sebaceous glands and triggering acne **( Chen WC & Zouboulis CC, 2009)**.

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in reproductive aged women. Women with PCOS often experience dermatologic manifestations of hyperandrogenism; including hirsutism, acne vulgaris and androgenic alopecia. History, clinical presentation and investigations all help in the diagnosis of underlying causes of acne and determination of the therapeutic approach **(Chuan SS & Chang RJ, 2010)**.

## Aim of the work:

This study is carried out to compare between adolescent (early) onset and adult (late) onset facial acne in females in terms of clinical characteristics. In addition, this study aims to investigate associated abnormal hormonal levels and/or underlying polycystic ovary syndrome (PCOS) with acne.

# Acne Vulgaris

## I. Introduction

### 1) Definition & Prevalence:

Acne is a chronic inflammatory disorder of pilosebaceous unit (PSU). The structure of PSU consists of the hair follicle, hair, arrector pili muscle, and sebaceous gland **(Jo Ann CE & Brian LF, 2006)**. Acne is considered primarily a disease of the adolescence, with 85% of all teenagers being affected to some degree. It occurs with greatest frequency between the ages of 15 and 18. Generally, involution of the disease occurs before age of 25; however, great variability in age of onset and of resolution occurs. 12% of women will continue to have clinical acne until 44 years of age **(Goodman G, 2006)**.

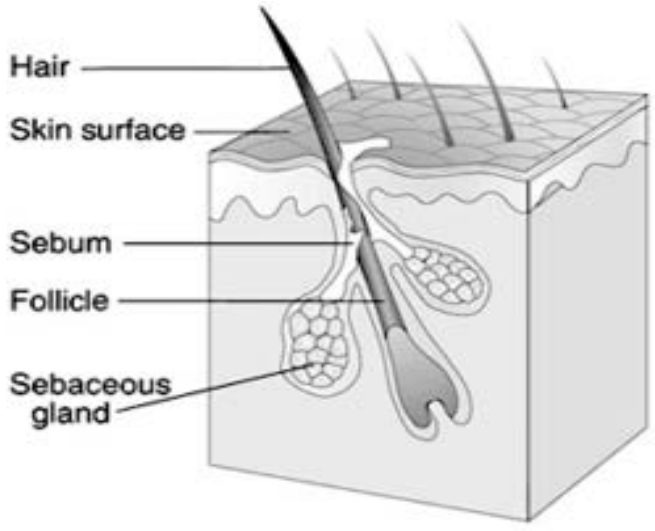


**Fig.1: Schematic view of hair follicle & sebaceous gland (Jo Ann CE & Brian LF, 2006).**