



A REVIEW ON ACNE VULGARIS

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ABSTRACT:

One of the most prevalent dermatological conditions affecting adolescents is acne vulgaris. A skin condition known as acne vulgaris, or simply acne, affects people and is characterised by skin that is red and scaly (seborrhea), as well as blackheads and whiteheads.(comedones), pinhead-sized papules (nodules), big papules (pimples), scarring, and pimples. A pilosebaceous unit illness called acne vulgaris causes papules, pustules, nodules, and cysts as well as open and closed comedones. Although acne is rarely life threatening, severe acne can have an impact on social interactions and mental health. The focus of the current study is on the epidemiology, aetiology, pathophysiology, differential diagnosis, and therapy of acne using oral and topical pharmacological dosage forms. Benzoyl peroxide, antibiotics, sulphur and sodium sulphacetamide, antiandrogen drugs, salicylic acid, hormonal therapies, alpha hydroxy acids, retinoids, azelaic acids, and nicotinamide are some of the pharmaceuticals used to treat acne. Nowadays, acne can be treated with laser and light equipment as well as with minor surgery.

Keywords: Acne vulgaris, pilosebaceous unit, comedones, benzoyl peroxide, medications, and laser therapy.

Introduction:

Acne vulgaris (AV) is a disease of the pilosebaceous unit that causes noninflammatory lesions (open and closed comedones), inflammatory lesions (papules, pustules, and nodules), and varying degrees of scarring. Alternative names for acnes are pimples, spots or zits. Nearly everyone suffers from acne some time or another. Acne affects both sexes and all races. Although acne mainly affects adolescents, it can affect a wide age range. Acne vulgaris in patients may start during adolescence and persist or have onset in adulthood. Acne has various psychosocial effects that impact patients is quality of life. Acne rosacea is synonym for rosacea and some persons not have acne comedones associated with their rosacea, hence prefer the term rosacea. Chloracne occurs due to exposure to polyhalogenated compounds.

Epidemiology:

Around 9.4% of people worldwide have acne vulgaris, with teens having the highest prevalence of the condition. Among all ethnic groupings, it affects more than 90% of men and 80% of women. Several nations have different rates of adult and adolescent acne, ethnic categories. According to Bhate and Williams, 85% of teenagers in the US have acne. The overall frequency among adolescents in Turkey students, the prevalence of acne is 68.1%. Another community-based research of Chinese teenagers and adults found that 33.7% of females between the

ages of 15 and 19 had acne. According between the ages of 13 and 19 was 60.7%. According to a study on acne among Malaysian medical to Okoro et al., 71.7% of female secondary school students in South-West Nigeria are female.

Despite this, acne is neither physically dangerous nor life-threatening, but it can impair a patient's social and psychological functioning and lower their quality of life (QOL). This study sought to ascertain the prevalence of acne vulgaris among female secondary school students in Arar city (the principal city in the Northern Frontier Region of Saudi Arabia), because no community-based studies on the condition had been carried out there previously.

Etiology:

Acne is caused by the sebaceous glands being oversensitive to a normal level of androgens in the blood, which P. acnes and inflammation exacerbate.

Acne is caused by the:

- The use of medications like lithium, steroids, and anticonvulsants; excessive sun exposure.
- The use of occlusive clothing such as shoulder pads, headbands, backpacks, and underwire brassieres.
- Endocrine disorders like polycystic ovarian syndrome; and even pregnancy.
- Estimates of heritability range from 50 to 90%.

Environmental Elements: It consists of a number of elements, such as high humidity, persistent sweating, an increase in skin hydration, exposure to filth or vaporised frying oil, or specific compounds, such as petroleum derivatives.

Drug Abuse: Acne is brought on by medications such as phenytoin, isoniazid, phenobarbital, lithium, ethionamide, steroids, azathioprine, quinine, and rifampin

Hormonal: Acne can also be brought on by puberty and menstruation. Follicular glands swell and sebum production rises throughout puberty as a result of an increase in androgen levels. Similar effects are produced by anabolic steroids. The androgens testosterone, dihydrotestosterone, dehydroepiandrosterone sulphate, and insulin-like growth factor 1 (IGF-I) are among the hormones connected to acne. Acne vulgaris development in older age groups is rare, but the incidence of rosacea, which has symptoms similar to those of acne vulgaris, will rise.

Genetic: Acne does not have a typical Mendelian inheritance pattern, hence its genetic susceptibility is polygenic. There are a number of potential genes causing acne, including polymorphisms in CYP1A1, Interleukin-1 alpha, and tumour necrosis factor-alpha.

Psychological: According to psychological research, more severe acne is linked to higher stress levels. According to the National Institutes of Health (USA), stress might make acne worse. In a study of teenagers in Singapore, a favourable link between stress levels and acne severity was found.

Parasitic: Acne is linked with the parasitic mite Demodex but it is not clear whether Demodex or Demodex associated bacteria causes the effects.

Pathogenesis:

Four key pathogenic processes lead to the formation of acne lesions:

- Follicular keratinization alteration that causes comedones.
- Sebum production increased and changed under the influence of androgens.
- Colonization of follicles by *Propionibacterium acnes*.
- Complex immune systems, including both innate and acquired immunity, are involved in inflammation.

The pathogenesis of acne is also influenced by environmental factors, diet including dairy and chocolate consumption and genetics. Acne in adult women has a particularly complicated aetiology. Androgens have a significant impact, as shown by the response of adult female acne to hormonal therapies, particularly in the context of hyperandrogenism disorders like polycystic ovary syndrome (PCOS) and the use of hormone-based therapies like oral contraceptives and anti-androgen medications in females with normal androgen levels.

Types of Acne Vulgaris:

Blackheads: are open skin lumps that collect extra oil and dead skin. The black patches, which mimic dirt deposits, are actually generated by an uneven light reflection off the obstructed follicle.

Whiteheads: are bumps that are kept closed by skin debris and oil.

Papules: Little red or pink pimples that swell up.

Pustules: are pus-filled pimples. They have the appearance of red rings encircling whiteheads. If they are picked or scratched, they may leave scars.

Pityrosporum folliculitis: also known as fungal acne, arises when there is an overabundance of yeast in the hair follicles. They could become swollen and itching.

Nodules: Sturdy zits that are embedded deep in your skin. They are huge and unpleasant.

Cysts: are pus-filled bumps. They might leave scars.

Classification of Acne on Basis of Grades:**1) Mild Acne:**

Contains <20 comedones, <15 inflammatory lesions, total lesion count < 30



2) Moderate Acne:

contains 20-100 comedones, 15-50 inflammatory lesions Or total lesion count 30-125.

**3) Severe Acne:**

contains > 5 pseudocysts, Total comedo count >100, Total inflammatory count >500, total lesion count >125.

**MANAGEMENT:**

Benzoyl peroxide, antibiotics, antiseborrheic drugs, sulphur and sodium sulphacetamide, anti-androgen drugs, salicylic acid, hormonal therapies, alpha hydroxy acids, retinoids, azelaic acids, keratolytic soaps, and nicotinamide are some of the medications used to treat acne. Moreover, modest subcision surgery and laser and light equipment are used. Due to its efficiency and modest side effects, such as irritating dermatitis, skin dryness, redness, and peeling, benzoyl peroxide is the first line treatment for mild and severe acne. It possesses anti-inflammatory effects and aids in preventing P. acnes-related comedone formation. Sunscreen is paired with topical application to reduce sensitivity to the sun and avoid sunburn.

Antibiotics and benzoyl peroxide are frequently mixed together. At all concentrations, benzoyl peroxide is found to be just as effective as antibiotics.

Antibiotics

Medications Due to their antimicrobial effectiveness against P. acnes, antibiotics are utilised in more severe instances, as well as anti-inflammatory qualities. With P. acnes resistance rising everywhere, they are becoming less effective.

For the treatment of acne, clindamycin, erythromycin, and tetracyclines such as doxycycline, oxytetracycline, lymecycline, and minocycline are applied topically or taken orally.

Antiseborrheic Drugs:

Sulfur is used in quantities ranging from 1 to 10% and acts as a mild keratolytic and antiseborrheic, but it also gives off a foul smell and stains clothing. Sebum-reducing medicines also include zinc sulphate and alcohol-ether mixed in an equal ratio.

Topical Sulfur and Sodium Sulphacetamide:

Sulfur with sodium sulphacetamide for topical use

Sulfur is employed as an antimicrobial and drying agent. It can be found in foam, lotion, cream, and wash formulations. Acne sufferers with sensitive skin can use sodium sulphacetamide as a treatment.

Acid Salicylate:

Salicylic acid decreases acne because it contains bactericidal and keratolytic effects.

Therapy for Antiandrogens:

Combination oral contraceptives can be used to treat acne in females. Norgestimate, desogestrel, or drospirenone combination products are examples of third- or fourth-generation progestins that may be more advantageous. Acne can be effectively treated with oestrogenic oral contraceptives. Norethisterone is incongruent with acne because of the androgenic features of oral contraceptives. Norethisterone is in conflict with acne because of the androgenic features of oral contraceptives.

Topical Retinoids:

Topical retinoids have anti-inflammatory qualities, normalise the follicle cell life cycle, and stop these cells from becoming hyperkeratinized, which can cause a blockage. Tretinoin, adapalene, and tazarotene are all part of it. They have substantially lesser adverse effects such skin irritability and flushing and are comparable to isotretinoin and vitamin A.

Oral Retinoids:

After using isotretinoin for one to two months, improvement can be noticed in cases of moderate to severe acne. A single session of treatment results in complete remission in more than 50% of patients in roughly 80% of cases, and a second course is necessary for 20% of patients.

Table 1: Current Medical Treatments of Acne Vulgaris .

Administration	Drug or dosage form	Treatment features
Oral	Isotretinoin, Tetracycline, Doxycycline, and Minocycline (13-cis-retinoic acid)	Daily medication intake, high patient compliance, and drug use restrictions due to adverse effects
Topical	Green tea extracts, Benzoyl peroxide, Clindamycin, Erythromycin, Tetracycline, Tretinoin, and Tazarotene	local medication administration, simpleness of stopping medication action, The usage of the medications is restricted by side effects
Particle-based Drug delivery system	Nanostructured lipid carriers, liposomes, solid lipid nanoparticles, and micro emulsions	drug release that continues, Enhanced over topical gel, increased drug flow over the skin, efficient for targeting

		follicles
Light based therapy	5-aminolevulinic acid, endogenous porphyrins (coproporphyrin III)	Laser therapy alone or in combination with liposomal medications has been shown to have less side effects than systemic/topical administration and drug delivery systems.

CONCLUSION:

The most prevalent skin condition affecting adolescents is acne vulgaris. Seborrhic skin, blackheads and comedones, papules, pimples, and scars are the hallmarks of acne vulgaris.

The Pillsbury scale, Cook's acne grading scale, and Leeds acne grading technique are three different measures used to rate the severity of acne vulgaris. Various medicines for acne treatment includes benzoyl peroxide, antibiotics like erythromycin, clindamycin, tetracyclines, antiseborrheic medications like sulfur and sodium sulphacetamide, anti-androgen medications like norgestimate, esogestrel or drospirenone, Dianette®, Yasmin®, salicylic acid, hormonal treatments, alpha hydroxy acid, retinoids, azelaic acid, keratolytic soaps and nicotinamide.

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