

A Review Paper on Acne

Krishna Raj Singh¹, and Dr. Durgesh Wadhwa²

^{1,2}Assistant Professor, Department of Biotechnology, Sanskriti University, Mathura, Uttar Pradesh, India

Correspondence should be addressed to Krishna Raj Singh; hodbio-tech@sanskriti.edu.in

Copyright © 2022 Made Krishna Raj Singh et al. This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT- Among the most common skin problems is eczema concerns between teenagers is acne. This disease affects every sebaceous glands unit. Acne is created by impassable pilosebaceous units proionobacterium acnes is also detected. Acne sensitivity is examined in order to determine the optimal treatment option. Acne medication is necessary to avoid damage and adverse affective effects must commence as early as practicable. It should be tailored to each patient's specific needs, keeping in mind the kind of acne, its intensity, the patient's ability to use the treatment, and his or her mental state. Topical therapies are the most widely used handling treatment mild-acne. Strong acne is treated with oral anti-biotics. Following that, anti-biotic opposition can be condensed by utilising non-antibiotic interesting treatments. Iso-tretinoin is a drug that is being used to treat acute acne and can lead to long-term resolution. If medical experts gave more knowledge and attention, acne treatment may be considerably improved.

KEYWORDS- Acne Grading, Acne Treatment, Acne Vulgaris, Acne Psychological Effects, Propionobacterium Acnes.

I. INTRODUCTION

Acne is among over 85 percent of adolescents suffer with one of the most frequent atopic dermatitis. Acne normally appears around the age of puberty and diminishes by the point when an individual reaches the age of 20, however some people Acne can influence individuals in their 40s and 50s. It's rarely a good experience situation, but it is regularly ignored as a self-limiting complaint. In postgraduate training, it receives minimal attention [1]. Despite the evident aesthetic character, its consequences may extend far beyond the skin's surface, placing a great responsive and psychosomatic costs for patients that-may have been far inferior than the corporeal maltreatment [2]. Changes in the look of the skin may lead to a shift in body image, which has been linked to feelings of anger, fear, humiliation, anxiety, sadness, embarrassment, bullying, and stigmatization among peers [3]. Acne has also been linked to low self-esteem, social isolation, feelings of inferiority and insecurity, restricted job prospects, functional and the interpersonal problems at works, and suicidal inclinations. The loss of quality of life is considered to be comparable to that caused by epilepsy, diabetes, asthma or arthritis[2], [4]–[6].

A. Aetiopathogenesis

Acne is the complex illness that is influenced by hereditary factors, stress, androgens, as well as excessive perspiration [7]. Acne is known to be triggered by corticosteroids, iodides, bromides, lithium, oral contraceptives, and chemicals like dioxins, as well as endocrine diseases including Cushing's polycystic and syndrome ovarian syndrome. Acne is more common among current smokers, although contrary to popular belief, nutrition, lack of exercise, poor cleanliness, greasy hair falling over the faces, and masturbation that have no impact [8]. Acne is a skin problem where the sebaceous glands units are hindered. Sebum generation is prevented by a rotation in the keratinization specific order in the follicle. Sebocyte and follicular keratinocyte hyperresponsiveness to oestrogen authentication is considered to characterize acne, culminating in sebaceous gland metaplasia and seborrhea. A confined comedone is constructed by an overly large follicular lumen exacerbated by inspissated-keratin and lipid-debris (whitehead) [9]. The colloidal suspension mass extends and forms a plug whenever a follicle penetrates the skin through a portal, culminating in an exposed comedone (blackhead).

Propionobacterium acnes colonises and thrives in the sebaceous duct, breaking down sebum into irritants like triglycerides, which can cause irritation. The follicle epithelium explodes when lymphocytes penetrate it, releasing oil, bacteria, and protein into the basement. Inflammatory acne is characterized by erythematous papules, pustules, and nodular swelling produced by neutrophils, lymphocytes, and alien body granulocytes aggregating and causing erythematous papules, blisters, and nodular inflammation [10]–[12].

B. Characteristics of the Clinic

Acne is characterized by a slew of symptoms linked to swollen, inflammatory, or scarred pilosebaceous units. The primary characteristic is lesional polymorphism, which is most frequently observed on the back, chest and face. Seborrhoea is by far the most common symptom. Pustules, papules, nodules, and cysts are examples of inflammatory pilosebaceous units that may be open or closed comedones [13]. Multiple provocative papules and swellings merge to create draining sinuses in more severe instances, causing persistent scarring and, in rare circumstances, malignant alterations. Postinflammatory lesions, such as macular

pigmentation and scarring, may also develop (hypertrophic, ice pick scars, keloids, atrophic macules, depressed fibrotic and perifollicular elastolysis). In pigmented skin, postinflammatory hyperpigmentation is frequent [14].

C. Acne Classification

Acne severity is graded to assist identify the best treatment option. There are a variety of grading methods available, however the Leeds reread acne grading systems (a numerical visual grading system) appears to be the most repeatable, accurate and quick.

1) Acne Treatment Management

Treatment should be safe, and the psychological load should be reduced via emotional and social support, as well as debunking common misunderstandings about the illness [15]. To reduce the danger of scarring or negative psychological consequences, treatment should begin as soon as feasible. It should make an effort to eliminate non-inflammatory abrasions may that progress to provocative abrasions, alleviate present irritation, and decrease the P acnes-population. Each patient's medication must be tailored to their specific situation, taking into consideration the kind of acne, its aggressiveness, the patient's capability to use the remedy and their motivation to do so emotional public. It's vital to stress to the patient that acne therapy is a huge commitment from the start. Because certain formulations are oily and might worsen or even cause acne-like lesions, advise about how to It may be necessary to implement cosmetics, moisturizer, skincare products, and hair gels.

2) Acne Treatment for Mild Cases

The most frequent therapy is topical medication, which has the primary goal of preventing new lesions. Because they have a lingering reaction, medication To prevent the occurrence, it should be brought up to date. Topical-treatments are solitary beneficial and where, after they have been applied, thus they should be functional to all acne-prone extents of the skin on a frequent basis. Current treatment is necessary to avoid resurgence [16]. Some antiseptics include benzoyl peroxide, atelic acid, antibiotics, and retinoid. P acnes is bactericidal, and benzoyl peroxide treats inflammatory and non-inflammatory acne. It's an tarnishing chemical that mechanism by providing oxygen into the cavities to kill P-acnes [17]. As a consequence of this mode of exploit, P-acnes not once develop fighting to benzoyl-peroxide, and there may be unpleasant side consequences such as irritating irritation and hair-bleaching, dresses. Achieved by coating anti-biotics including tetracycline, clinda-mycin, and Erythromycin are effective against bacteria for Propionibacterium spots and can assist with moderately severe inflammatory conditions[18]–[21].

D. Treatment of the Moderate Acne

When conventional combinations are not really tolerated or insufficient, current therapy are the standard treatment for moderate acne. They have been demonstrated to reduce the quantity of P acnes. Antibiotic possess anti-inflammatory

characteristics by blocking neutrophil chemotaxis and reducing and inhibiting cytokine generation, as well as interference with propionobacteria development and metabolism. The most commonly used systemic antibiotics include erythromycin and various tetracyclines. For a long period of time, they've been proved to be beneficial in the management of inflammatory conditions. When sulfa drugs are not absorbed or are inappropriate, including during pregnancy, nursing, or in children aged 8–12 years, erythromycin (macrolide) should be administered instead. As a first line oral antibiotic, first generation-tetracyclines (tetracycline-hydrochlorid-oxytetracycline) or second-generation-tetracyclines (doxy-cycline, lymecycline, or minocycline) would be explored. Tetracycline is cheap and frequently successful in previously untreated patients, although it comes with gastrointestinal side effects and must be taken on an empty stomach. The second generation of tetracyclines has the benefit of better absorption that is unaffected by meals. When second-generation tetracyclines are administered, this may increase compliance, especially in teenagers. Because doxycycline is eliminated through the liver, it may be administered in individuals with kidney disease. Cotrimoxazole and sulphamethoxazole have been recommended as third-line therapy for dermatitis, while other systematic medications have been explored. infections are inappropriate or there is established susceptibility to other therapies.

E. Hormonal-Therapy

This might be particularly operative in women, independent of their serum-androgen levels. The oestrogen element of contraceptives may decrease pituitary gonadotrophin expression, reducing ovarian androgen production. Oral contraceptives can cause nausea, excessive bleeding, weight gain, and breast soreness. According to known scientific evidence, antibiotics have no influence on the usefulness of contraceptives in terms of childbearing Antiandrogen medications may be effective. help women with deep hidden nodules of something like the lower face and neck get rid of their acne. Although a combinations of cyproterone acetate and ethinyl oestradiol (Dianette) is often successful, its effects may take three to six months to manifest. Menstrual irregularities, breast soreness, vomiting, nausea, fluid retention, melasma and headache are among side effects of cyproterone. Pregnancy should be avoided while on cyproterone treatment since the male fetus may become feminized. Spironolactone, taken twice daily in dosages of 50.01 mg to 99.9 mg, seems to decrease sebum-production and improve acne. It works as an anti-androgen, anti-estrogen, anti-estrogen, anti-est as well as a 5 reductase inhibitor. It is only utilised in extremely limited conditions due to the risk for carcinogenicity. If the patient does not have breast discomfort or headaches, the dosage can be amplified to a extreme of 199.9 mg per day. It can be used through an oral-contraceptive to lower the risk of pregnancy and foetal feminization in sexually active women.

F. Acne treatment for Extreme Cases

Isotretinoin is an oral medication that is being used to treat serious dermatitis that hasn't responded to a mixture of topical and oral therapies. Isotretinoin belongs to the retinoid family of chemicals, which includes retinol (vitamin A). It's the only therapy that affects all four main variables involved in acne's etiology, and it's the only treatment that has the potential to lead to lasting remission. It's also less expensive than taking antibiotics orally. Because it is a fat soluble medication, it is better absorbed when taken with meals. Doses range from 0.2 mg/kg per day to 0.3 mg/kg per day. The initial dosage is 0.6 mg/kg/day, and the dose is progressively raised based on adverse effects and clinical response. Minor isotretinoin adverse effects including aridity and discomfort of the eyes, oral-mucosa, skin, nasal-mucosa, muscular aches, pains, hypertriglyceridemia, and poor night-vision may be reversed by lowering the dosage or stopping therapy. Emollients and fake tears may help with mucocutaneous dryness. Patients with essential risk characteristics such-as-alcoholism, diabetes, obesity or familial hyperlipidemia are more likely to develop retinoid-induced hyperlipidemia. Increased triglyceride and cholesterol levels after retinoid therapy are not always predicted by pretreatment values. A proper diet and lipid-lowering medications may help control the elevated levels to some extent.

Within the first two months of therapy, severe possible adverse effects like depression and suicide has been recorded, although this was not observed in population-based research. Successful therapy's psychological benefits should be evaluated against the risk of depression. Pseudotumour-cerebri and kindly intracranial-hypertension with papilledema are unusual side effects of isotretinoin therapy when collective with oral-tetracyclines. The medicine may individual be arranged by dermato-logists and must be taken in combination with a pregnancy prevention programme. A signed consent document stating that the individual is knowledgeable of become antenatal through treatment and for the next four-weeks should be obtained. Prenatal testing is important prior to starting medication, and quarterly ovulation testing is advised through treatment. Medication should commence on the second or even third day of ovulation, and if appropriate, reliable contraceptives should be administered.

II. DISCUSSION

Inflammatory skin condition that occurs when your hairs follicles become clogged with excess oil. Pimples, blackheads, and acne are all caused by it. Acne affects all age groups, even though it is most prevalent among teenagers. Despite the fact that there have been excellent acne alternative treatments, acne can be difficult to manage. Acne is primarily a hormonal disease triggered by androgen hormones, which peak in activity throughout adolescence and early adulthood. Acne is caused by sensitivity to these hormones, which may be exacerbated by surface germs on the skin and fatty acids in the oil glands. Acne usually goes away on its own at the end of adolescence, although some individuals continue to have acne far into adulthood.

However, almost all acne may be effectively treated. It's only a question of figuring out which therapy is best for you.

III. CONCLUSION

Acne is a very prevalent skin disease that, although not immediately threatening life, may have a catastrophic physical and psychological impact on vulnerable teenagers' lives. Although there are effective and safe acne treatments available, many people do not believe acne to be an issue worth addressing. To avoid scarring, acne treatments should begin as shortly as possible, and the most effective medication with the fewest side effects should be selected. Both the medical community and the general people have a misunderstanding of the situation. To avoid the spread of disinformation across the community, dispelling misunderstandings regarding its sources, acne and the accessibility and effectiveness of therapy requisite begin in medical-school. A major issue is patients' failure to take medication in a manner that results in therapeutic benefit. Patients should get accurate information regarding the reasons of acne, as well as reasonable prospects about time frame and likely outcomes of therapy, via health education. Concordance hinges on better patient educations and care from medical personnel and other experts, since this will enable people to treat themselves more successfully.

REFERENCES

- [1] A. Agarwal, S. Agarwal, A. Lalwani, R. Najam, and A. Kumar, "Fetal bradyarrhythmia causing hydrops fetalis: A journey from fetal echo to autopsy," *Ultrasound*, 2020, doi: 10.1177/1742271X20933996.
- [2] E. Platsidaki and C. Dessinioti, "Recent advances in understanding Propionibacterium acnes (Cutibacterium acnes) in acne [version 1; referees: 2 approved]," *F1000Research*, 2018, doi: 10.12688/f1000research.15659.1.
- [3] A. Raina, M. K. Sunil, L. Pradhan, G. Yeluri, S. V. Ravindra, and R. Handa, "Characteristics and prevalence of underwood's septae on digital panoramic radiographs," *J. Indian Acad. Oral Med. Radiol.*, 2020, doi: 10.4103/jiaomr.jiaomr_73_20.
- [4] B. Dréno, S. Pécastaings, S. Corvec, S. Veraldi, A. Khammari, and C. Roques, "Cutibacterium acnes (Propionibacterium acnes) and acne vulgaris: a brief look at the latest updates," *Journal of the European Academy of Dermatology and Venereology*, 2018, doi: 10.1111/jdv.15043.
- [5] A. L. Zaenglein et al., "Guidelines of care for the management of acne vulgaris," *J. Am. Acad. Dermatol.*, 2016, doi: 10.1016/j.jaad.2015.12.037.
- [6] N. Skroza et al., "Adult acne versus adolescent acne: A retrospective study of 1,167 Patients," *J. Clin. Aesthet. Dermatol.*, 2018.
- [7] G. Di Pietro, G. Chornokur, N. B. Kumar, C. Davis, and J. Y. Park, "Racial differences in the diagnosis and treatment of prostate cancer," *International Neurourology Journal*, 2016, doi: 10.5213/inj.1632722.361.
- [8] R. Skiba, T. Syryło, and T. Ząbkowski, "Diagnosis and treatment of prostate cancer in elderly men," *Pediatr. i Med. Rodz.*, 2015, doi: 10.15557/pimr.2015.0003.
- [9] B. L. Kinlock et al., "Racial disparity in time between first

- diagnosis and initial treatment of prostate cancer,” *Cancer Control*, 2016, doi: 10.1177/107327481602300108.
- [10] A. M. O’Neill and R. L. Gallo, “Host-microbiome interactions and recent progress into understanding the biology of *acne vulgaris*,” *Microbiome*. 2018, doi: 10.1186/s40168-018-0558-5.
- [11] S. M. Gallitano and D. S. Berson, “How Acne Bumps Cause the Blues: The Influence of *Acne Vulgaris* on Self-Esteem,” *International Journal of Women’s Dermatology*. 2018, doi: 10.1016/j.ijwd.2017.10.004.
- [12] I. L. Kanwar, T. Haider, A. Kumari, S. Dubey, P. Jain, and V. Soni, “Models for acne: A comprehensive study,” *Drug Discov. Ther.*, 2018, doi: 10.5582/ddt.2018.01079.
- [13] A. Gasnier and N. Parvizi, “Updates on the diagnosis and treatment of prostate cancer,” *British Journal of Radiology*. 2017, doi: 10.1259/bjr.20170180.
- [14] B. Ahn, K. Park, H. Lee, and J. Kim, “A survey of robotic technologies for diagnosis and treatment of prostate cancer,” *J. Inst. Control. Robot. Syst.*, 2010, doi: 10.5302/J.ICROS.2010.16.9.852.
- [15] L. M.S. and T. H.-J., “The diagnosis and treatment of prostate cancer: A review,” *JAMA - J. Am. Med. Assoc.*, 2017.
- [16] S. M. Inder et al., “Impact of rapid access prostate cancer clinics in the diagnosis and treatment of prostate cancer,” *BJU Int.*, 2017.
- [17] M. Daniyal, Z. A. Siddiqui, M. Akram, H. M. Asif, S. Sultana, and A. Khan, “Epidemiology, etiology, diagnosis and treatment of prostate cancer,” *Asian Pacific Journal of Cancer Prevention*. 2014, doi: 10.7314/APJCP.2014.15.22.9575.
- [18] P. Kapinos and M. Y. El Khoury, “*Propionibacterium acnes* Septic Pericarditis in a Patient with Sarcoidosis and Acne,” *Infect. Dis. Clin. Pract.*, 2018, doi: 10.1097/IPC.0000000000000556.
- [19] T. Jansen, S. Grabbe, and G. Plewig, “Clinical variants of acne,” *Der Hautarzt*, 2005, doi: 10.1007/s00105-005-1031-5.
- [20] D. Marasović, “*Acne vulgaris*,” 2001, doi: 10.1891/9780826153425.0004b.
- [21] S. Mennu, D. Boccardi, and G. Pistrutto, “Neonatal acne developing into ‘*acne conglobata*’. Treatment with isotretinoin,” *Eur. J. Pediatr. Dermatology*, 1998.