Case Report

Finalist Award in Clinical Case in Skin Enhancement and Integrative Acne Treatment: 6th Anti-aging and Beauty Trophy 2018-2019, Monaco Work Base on Food Intolerance Test: A Case Study

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Abstract

Acne vulgaris is a skin condition that can occur in patients of any age. The outcome depends on genetic regulation in terms of hormone level control, sebum excretion, keratinization, and the level of immunological response. However, it is also possible that factors such as hygiene and diet can affect acne, while some recent studies have revealed links between certain specific food types and the onset or severity of acne. Therefore, this case study reports the effectiveness of the integrative approach in treating acne vulgaris in a young man who showed a rapid response to the combination of topical therapies and Intense Pulse Light (IPL) therapy with the removal of certain foods in line with the results of food intolerance testing. It was reported that the patient showed significant improvements following treatment for a three-month period, suggesting the strong potential of the integrative approach for acne treatment.

Keywords: acne vulgaris, food intolerance, integrative treatment

Acne vulgaris (AV) is a condition associated with the pilosebaceous unit. It appears in the form of inflammatory lesions (papules, nodules, and pustules), as well as non-inflammatory lesions (open comedones and closed comedones), while scars can also develop. AV is relatively common, especially during adolescence, and has a lifetime prevalence of around 85%.[1] Acne leads to a number of health issues, including residual scars and psychological problems, which can lead to poor self-image, anxiety, or depression. Quality of life is also adversely affected.[2-4]

Acne lesions are the result of four main pathogenic processes. These are changes in follicular keratinization causing comedones, greater sebum production under androgen control, colonization of the follicles by *Propionibacterium acnes*, and complex mechanisms leading to inflammation via innate and acquired immunity.[5,6] The pathogenesis of acne is also influenced by genetics,[7,8] diet,[9-13] including chocolate,[14,15] dairy consumption,[16-18] and environmental factors.[19-22] Mild or moderate acne cases are typically treated using topical therapy, such as retinoids and antimicrobials including benzoyl peroxide or antibiotics, but in the case of more severe acne, it is necessary to use systemic therapy. In that case, oral antibiotics are often prescribed,[23,24] along with hormonal therapies,[25] or isotretinoin.

Studies conducted before 2007 showed that acne is not influenced by diet, and instead is governed predominantly by genetic and hormonal factors.[26,27,15] However, other studies have added that a link between acne and diet would be likely, since hormones and growth factors are affected by diet. Therefore, there will be an effect upon the sebaceous gland activity and the production of sebum.

However, more recent research, such as that of Smith *et al*.[11,28] has instead placed emphasis on the examination of insulin sensitivity, glycemic load, hormonal mediators and their links with acne, finding a connection between acne and the consumption of milk.[29,17,16] Low levels of glycemic load, both with and without metformin, are linked to larger declines in acne lesion counts than is the case with higher loads.[12,30] Furthermore, both high

glycemic loads and the milk intake show independent signs of increasing the amount of serum insulin growth factor-1, thus suggesting one potential mechanism.[31-34]

One way to find out how the body reacts to different foods is to use the IgG Food Antibody Assessment, which is a blood test. It can activate complements but does not trigger histamine release. When people have adverse reactions to food, this can be highly distressing in the short term, and can lead to chronic health conditions. If there are circulating antibodies present, these may affect different patients in different ways. It can be beneficial to test in the case of certain conditions,[35] such as irritable bowel syndrome (IBS),[36-38] major depressive disorder, migraine,[39-41] eczema or other skin rashes,[42] aching joints,[43] autoimmune diseases,[44] Crohn's disease,[45] or obesity.[46] The presence of circulating IgG antibodies may indicate increased intestinal permeability, known as "leaky gut syndrome", triggering an immune response, which can cause the production of IgG antibodies to certain food types. Various factors related to diet and lifestyle can cause leaky gut syndrome, such as gut dysbiosis, alcohol,[47] stress,[48,49] chronic NSAID use,[50] a diet containing high levels of red meat, animal fat, and sugar, and low in fiber,[51] and lengthy periods of strenuous exercise.[52-54]

Case Report

A 21-year old Thai male exhibits moderate to severe inflammatory acne around the face with more than 20 inflamed pustules and nodules and more than 100 comedones, post-inflammatory hyperpigmentation, and pitted scars. The patient has no history of allergies that may be relevant, such as steroid creams, perfumes, or water.

The skin lesions were diagnosed along with the positive food intolerance test (IgG). The result included a strong reaction to egg whites and casein as well as numerous bean types.

The patient was advised to stop eating egg whites for a period of three months to allow a probiotic and prebiotic balance to develop in terms of gut bacteria. In addition, benzoyl peroxide cream, clindamycin cream, and isotretinoin gel were prescribed as treatments for acne. Meanwhile, Intense Pulsed Light Laser was done twice a month during the 3 months of the treatment period.

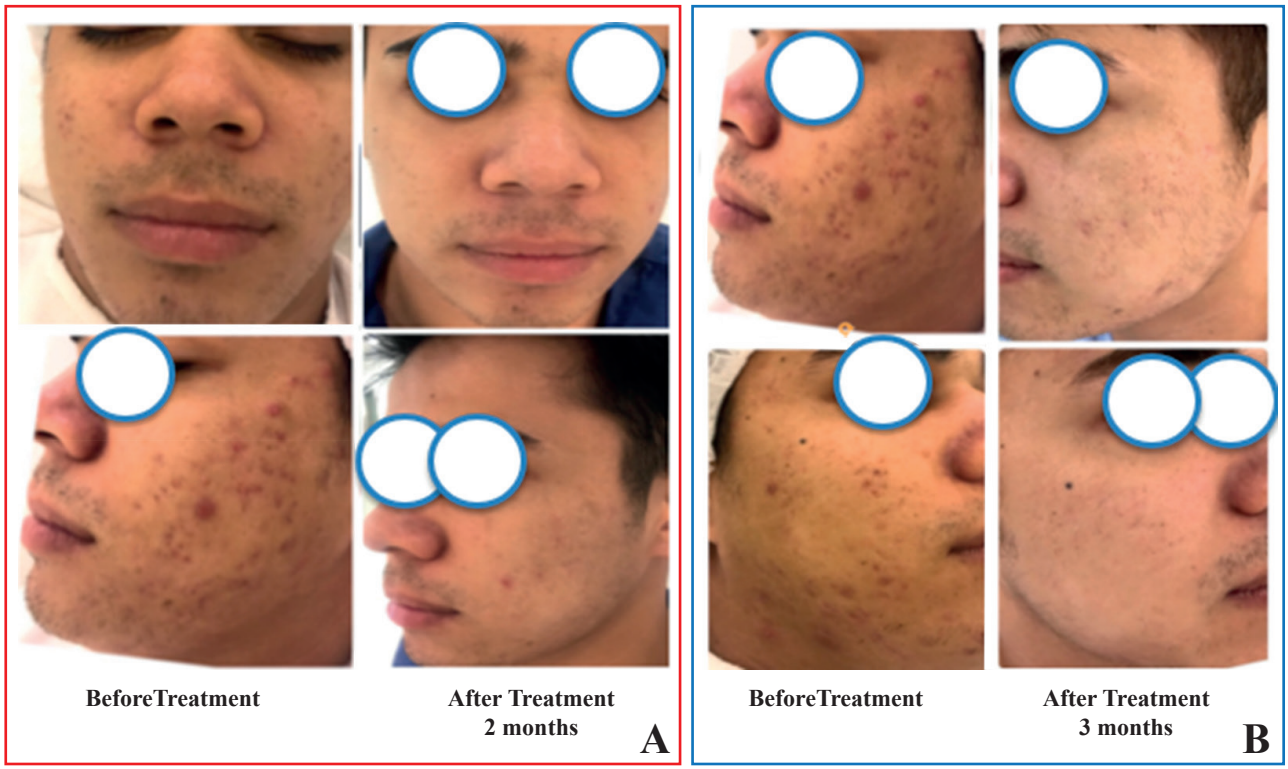
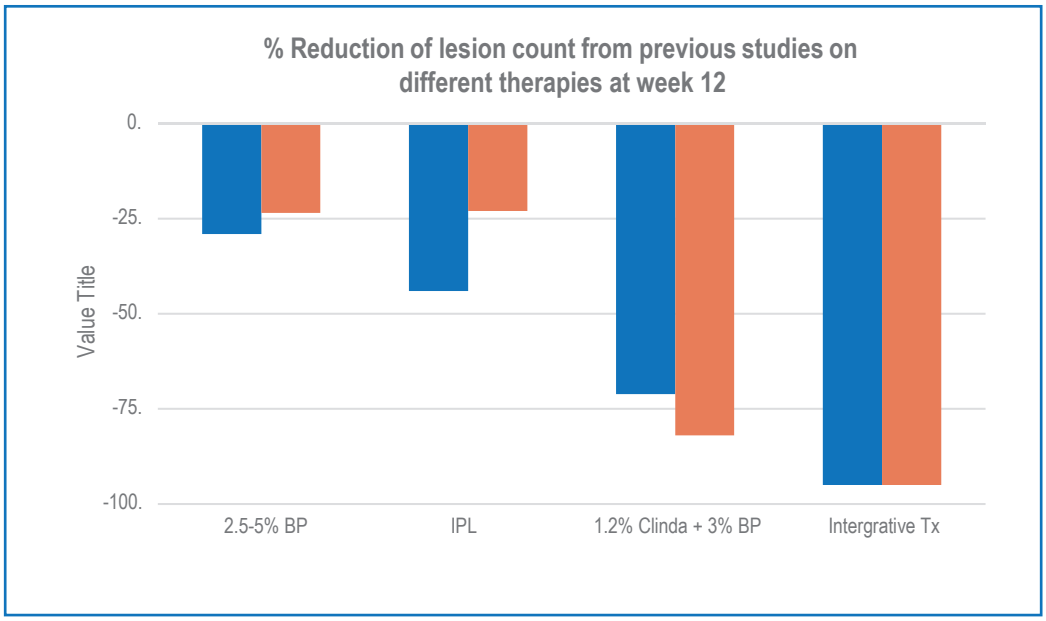


Figure 1: A. Photo of a patient compared before and 2 months after treatment.
B. Photo of patient compared before and 3 months after treatment. Both A and B pictures were approved by the patient which had avoided positive food, done laser treatment, applied acne cream.

Discussion

This case study examines the consequences of integrative treatment where the diet is changed to address the acne issue, and finds that when certain foods are removed, the ecosystem of the gut becomes more balanced which improves gut health. However, further studies would be required to determine the exact role played by diet in controlling acne.



For this patient, comedones extraction was combined with topical 5% benzoyl peroxide, 1% clindamycin lotion, isotretinoin gel, intense pulsed light therapy and changes to the diet based on the removal of certain food types involving elevated IgG antibodies. The treatment achieved good outcomes in lowering the comedones and inflammatory lesion count with the percentage of reduction of more than 90% at week 12, minimizing the number of scars, and post-inflammatory hyperpigmentation. Compare with previous studies, at 12 weeks of treatment, Kawashima *et al.*[55,56] demonstrated the effect of benzoyl peroxide 2.5-5% topical therapy, the mean differences in percentage reduction in non-inflammatory lesion count were 28–30% and in inflammatory lesion count were 13–34%. Meanwhile, a study by Hayashi et al.[57] in patients treated with 1.2% clindamycin phosphate and 3% benzoyl peroxide showed percentage reduction from baseline at week 12, in inflammatory lesion 82.07% and non-Inflammatory lesion counts 71.07%. Whereas Yeung et al.58 reported in the IPL therapy, the mean reduction of the inflammatory lesion counts 23%, and non-inflammatory lesions 44% in the 12 weeks.

The superior results of integrative therapy may arise for several reasons. Earlier research has explored the theoretical potential for diet to influence acne. Acne is a condition that stems from the excessive levels of sebum production, causing the hyperproliferation of follicular cells and the blockage of follicle openings, which are then colonized by bacteria, triggering an inflammatory immune reaction. Diet is significant because sebum production can be affected by androgens and hormonal mediators including SHBG and IGF-1, which can be affected by the patient's diet. In this patient, the acne may have been made worse by food intolerance as shown in the blood test result, so the condition can be improved by removing eggs and milk from the diet, leading to lower levels of inflammation. Furthermore, prebiotic and probiotic supplementation, along with modification of the diet, can improve intestinal health through re-balancing the gut environment. Improvements in gut health can lead to benefits for the gut-skin axis, with improvements in hormone and immune regulation.

In addition, the response to treatment may be positively affected by the removal of a high glycemic index diet such as cow's milk in this man, since it has been argued that a shift towards a western diet leads to increased acne prevalence. Other studies[32,20,19] have shown links between cows' milk consumption and the prevalence and severity of acne. Another cohort study[59] revealed that longer acne duration could result from high-glycemic-index food consumption, while a pair of randomized controlled trials,[28,11] showed that the risk of acne could be lowered by a low-glycemic-index diet. Western diets are known to be typically high-glycemic diets which can lead to insulin resistance, and thus potentially cause increased sebum production and thus lead to greater inflammation and acne.[11,28] It is understood that low-glycemic diets result in low levels of insulin being required to maintain the levels of blood glucose levels within normal parameters, whereas in contrast, a high-glycemic diet necessitates greater insulin use to achieve the same goal. Insulin resistance is thus a potential problem, and one which can lead to further health problems such as high blood pressure, obesity, diabetes, and heart disease. Integrative treatment is thus advantageous in both addressing the issue of acne, and enhancing the overall health of the patient.

Conclusion

The long-term use of conventional therapies of moderate to severe acne such as topical retinoid, oral antibiotic, and oral isotretinoin has shown to cause some serious side effects. This case report demonstrated that integrative therapy, including topical treatment and diet modification, reveals a significant improvement without side effects. We suggested that an integrative approach to acne treatments may improve the treatment outcome and patient satisfaction.

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