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Approach to Acne Management – A Review of the Different Medical Treatments

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Introduction

A recent study has shown that the prevalence of acne among Hong Kong adolescents was at a staggering 91.3%1 and a study in Australia also found acne to be one of the most common dermatological diseases encountered by the family physicians2. Although acne is never life-threatening, it can nonetheless have profound psychological impacts on patients if left untreated. Psychiatric disorders including depression and anxiety disorders can develop secondary to acne3-7 and in some cases, acne patients actually experience more severe anxiety and depression than patients with serious medical illnesses including cancer7. Through providing effective treatment to acne patients, not only were they physically treated, they also report significant improvements in self-esteem, affection, obsessive-compulsiveness, shame, embarrassment, body image, social assertiveness and self-confidence8.

Pathophysiology of Acne

In order to effectively manage acne, it is important to understand the pathophysiological causes of acne – (1) Increased sebum production, (2) Abnormal desquamation of follicular epithelium, (3) P. acnes proliferation and colonisation and (4) Inflammation and immune response. Treatments for acne can be classified into topical and systemic medications. Different treatments should be given to patients according to their clinical status and background health history. Table 1 summarises the actions of the common acne medications on these pathophysiological factors.

Treatment of Acne

Topical Medications

1. Topical retinoids
   Topical retinoids help to reduce obstruction within the follicles and are effective in the management of both non-inflammatory and inflammatory acne9. Different concentrations of topical retinoids are available for acne of different severity. When prescribing a topical retinoid, it is important to warn the patients that it may sometimes cause skin irritation10.

2. Topical benzoyl peroxide
   Benzoyl peroxide is a bactericidal agent that has been proven effective in acne treatment. It can help to prevent or decrease the development of P. acnes resistance11. As a result, it is often used in combination with oral or topical antibiotics.

3. Topical antibiotics
   Topical antibiotics have been shown to be effective in managing mild acne and are well tolerated12. However, the increase in resistance of P. acnes to topical antibiotics has limited the use of these medications as a single therapeutic agent13.

In summary, topical medications are effective in treating mild acne. Combinations of topical treatments are often used as studies have shown that combination therapies are better than monotherapy: Combining topical retinoids and topical antibiotics is more effective than either agent used alone14. Combining topical antibiotics with benzoyl peroxide reduces bacterial resistance, enhances efficacy and is more effective than using either of the agents alone15.

Systemic Medications

1. Systemic antibiotics
   Systemic antibiotics are commonly used to treat moderate and severe acne. They help to reduce the P. acnes population and decrease inflammation. The most commonly used antibiotics are tetracycline, doxycycline, and minocycline16. It is important not to use these medications in pregnant women as it may lead to certain birth defects and discolouration in the babies’ teeth. Patients should also be warned about the possible adverse side-effects of systemic antibiotics, such as gastric upset. In addition, doxycycline may be associated with photosensitivity and minocycline may be associated with pigment deposition in the skin, mucous membranes and teeth.
2. Oral contraceptives
Oral contraceptives have been shown to be effective in treating acne. It is particularly good for patients also need contraception. However, the clinical response is usually slow. Patients must also be warned of the possible side-effects, including breast tenderness, weight gain, melasma, etc.

3. Oral isotretinoin
Oral isotretinoin targets all the pathophysiological factors of acne. The indications for the use of this medication include (1) severe nodular acne, (2) acne resistant to oral antibiotics and (3) acne that produces physical scarring or psychological impacts. The approved dosage is 0.5 to 2.0 mg/kg/day and a course usually lasts a few months. There is a greater chance of remission if patients receive 120 – 150mg/kg over the treatment course. According to the literature, 39% of patients treated with oral isotretinoin experienced no relapses after stopping the medication for 3 years. Since isotretinoin is a vitamin A derivative, it interacts with many of the biological systems of the body, and may cause side-effects including those of the mucocutaneous, musculoskeletal, ophthalmic and liver systems. Elevation of blood cholesterol as well as headaches may also occur. Changes in mood, and even suicidal tendencies have also been reported in patients taking the medication. Most of the adverse effects are temporary and resolve after the drug is discontinued. It is therefore important to watch out for these adverse effects in each consultation.

In short, systemic medications are effective in treating moderate to severe acne. However, patients should always be warned about the potential side-effects before prescribing these medications.

Summary
As acne is one of the most commonly encountered skin diseases amongst doctors and that it is a disease that can be physically and psychologically distressing to patients, it is hoped that this review will help practitioners to identify the appropriate treatment for acne of various severity. Table 2 summarises the acne treatment algorithm suggested by the American Academy of Dermatology. It can be seen that a topical retinoid alone is already effective for mild acne, whereas oral plus topical medications are needed to treat moderate to severe acne.

References
14. Glass D, Boorman GC, Stables GI, Cunliffe WJ, Goode K. A placebo-controlled clinical trial to compare a gel containing a combination of isotretinoin (0.05%) and erythromycin (2%) with gels containing isotretinoin (0.05%) or erythromycin (2%) alone in the topical treatment of acne vulgaris. Dermatol 1999;199:242-7.

Erratum
1. With reference to the article ‘Thyroid Eye Disease: a Comprehensive Review’ in the Oct 2010 Issue, the legends of Figure 3 and Figure 4 on page 6 should be:

Figure 3 (A) Conjunctival injection seen around insertion of horizontal (in this case, lateral) recti muscles. (B) Exposure keratopathy and early microbial keratitis. (C) Severe conjunctival chemosis and injection during active TED

Figure 4 (A) Diffuse, symmetric, tendon-sparing extraocular muscles enlargement in axial CT scan of the orbits. (B) Symmetric severe proptosis, straightening of optic nerves with mainly enlargement in axial CT scan of the orbits. (B) Bilateral TED

2. With reference to the article “The Roles of Dental Professionals in the Management of Obstructive Sleep Apnoea” in the Mar 2010 Issue, The title of the author, Dr Hannah Daile CHUA, on page 4 should be:

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