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Perspective

Risks Associated with Tetracycline to Treat Acne Vulgaris

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DESCRIPTION

Acne vulgaris is a widespread skin illness that is becoming more common, ranking tenth in the world. Acne vulgaris resulted in 3.52 million disability-adjusted life years for patients aged 15 to 49, and 4.96 million overall in 2019. Acne affects around 85% of adults in the United States of America aged 12 to 25. Acne, on the other hand, is not simply an adolescent problem; it affects 40%-50% of people in their 20s and 20%-35% of adults in their 30s. Acne is the most common skin ailment, causing lasting scarring and having a substantial psychological impact. Furthermore, one study found that girls with severe acne had depressed twice as often as those with light acne while males with severe acne had depressed three times as often as those with mild acne.

Acne vulgaris is a pilosebaceous unit inflammatory disease. This disease pathogenesis is complicated with four inter-connected processes such as inflammation, increased sebum production, follicular hyperkeratinization and proliferation. This disease is frequently associated with increasing androgen levels and androgen receptor sensitivity throughout puberty. Most diagnoses are clinical, based on history, symptoms, and clinical examination. Closed bump, open bump, inflammatory papules, pustules, inflamed nodules, and inflamed nodulocystic lesions are the most prevalent distinctive lesions, and they are most commonly found on the face, neck, back, chest, shoulders, or upper arms.

Topical medications are indicated as first-line treatment for mild to moderate acne, whereas combination therapy and/or systemic therapies are recommended for moderate-to-severe acne. Oral antibiotics used for acne are tetracyclines, macrolides and trimethoprim or sulfamethoxazole which has been shown to be more effective and safe in the treatment of moderate to severe acne. There have been no studies comparing the efficacy of these treatments, but tetracyclines are generally considered first-line therapy because macrolides have been linked to increased antimicrobial resistance and trimethoprim/sulfamethoxazole has a less favourable side effect profile (including gastrointestinal disturbance and allergic skin reactions). Furthermore, tetracyclines are advantageous due to their anti-inflammatory and antibacterial properties, and they account for 75% of all oral antibiotics prescribed in dermatology. Doxycycline and minocycline are the most commonly given tetracyclines for acne.

Modified release 40 mg of doxycycline was significantly compared with the placebo in research studies as resulting in a 41.7% reduction in all total lesions and 35.9% for the placebo. Patients receiving 1 mg/kg daily extended-release minocycline experienced a 43.1% reduction in inflammatory lesions compared to 31.7% for placebo.

Aside from the growth in antibiotic resistance found with increased oral tetracycline use, there are a number of potential hazards linked with long-term tetracycline use. Doxycycline use has been linked to gut dysbiosis as well as an elevated risk of irritable bowel syndrome and inflammatory bowel disease. For example, it is found a hazard ratio of 2.25 for the development of the Crohn's disease by after taking doxycycline to treat acne. Long-term antibiotic use has also been linked to an increased risk of breast and colon cancer; however, additional research is needed to be conclusive. One recent study emphasised the importance of the microbiome and its alliance to cancer homeostasis, citing clinical data suggesting that systemic antibiotics can inhibit checkpoint efficacy, resulting in a lower risk of cancer.

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