Topical and systemic retinoids
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Retinoids are molecules that bind to and activate the retinoic acid receptors (RARs). Natural retinoids include vitamin A (retinol), its provitamin (β-carotene) and its aldehyde (retinal) and acid (all-trans retinoic acid) forms. They control a variety of essential biologic processes, proliferation and differentiation of epithelial tissues, cell growth arrest, apoptosis and immune regulation.

Currently, three generations of synthetic retinoids are available for use. First generation monoaromatic retinoids include tretinoin, isotretinoin, and alitretinoin. Second generation monoaromatic retinoids include etretinate and acitretin, and third generation polyaromatic retinoids include adapalene, bexarotene, and tazarotene.

Isotretinoin (13-cis-retinoic acid) significantly suppresses sebum production and has dramatic effects on acne. The latest approved systemic retinoid is alitretinoin (9-cis-retinoic acid), which acts on both RAR and RXR receptors, unlike isotretinoin and acitretin. It is approved for the treatment of chronic hand eczema with immunomodulatory and anti-inflammatory effect. Acitretin, an active form of etretinate, activates all three RAR subtypes and helps the normalization of differentiation and proliferation of keratinocytes. The principle use of acitretin are for psoriasis and for inherited disorders of keratinization. Bexarotene selectively binds to RXR and is approved for the treatment of cutaneous T cell lymphoma in both topical and systemic agents. Topical retinoids are mainstays in the treatment of acne vulgaris, photoaging, psoriasis, cutaneous T cell lymphoma and Kaposi sarcoma.

The systemic use of retinoids induce numerous adverse effects and teratogenic effects is the most serious one. Effective contraception is mandatory during the treatment and at least 2 year (3 years in US) for acitretin and 1 month for isotretinoin of contraception is required after the cessation of treatment. Dryness of lips, skin, and mucous membrane presents in most of the patients and other adverse effects include blepharoconjunctivitis, pruritus, alopecia, arthralgia, and lethargy.
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