New Options for Ichthyosis Vulgaris

Emerging data confirm that atopic dermatitis and ichthyosis share pathogenic traits, suggesting a role for barrier repair formulations in management.

By Joseph B. Bikowski, MD

Ichthyosis vulgaris is the most common type of ichthyosis—accounting for about 95 percent of all cases of hereditary ichthyosis. It affects one in 250 to 300 individuals, according to estimates, and is inherited in an autosomal dominant pattern with variable expressivity.1,2 It affects male and female patients equally and is not shown to occur with greater frequency in any particular racial group. Clinical manifestations of ichthyosis vulgaris primarily emerge during the first year of life up to about age five. Acquired ichthyosis is typically associated with systemic disease or drug reaction and is not a focus of this discussion.

Ichthyosis and Filagrin

Ichthyosis vulgaris (IV) is characterized by hyperkeratinization, and as such is associated with rough, dry skin; peeling or flaking; and inflammation. The extensor surfaces of extremities are most frequently affected, while the flexors are usually spared. While facial involvement may occur, it becomes less common as the patient ages; the trunk is often spared. A clinical hallmark of ichthyosis vulgaris is thickening of the palms and soles, with hyperlinearity. In ichthyosis vulgaris, scaling and sloughing, though widespread, are generally mild. For a given patient, severity can vary significantly based on climate and humidity. Clinically, IV has been associated with atopic dermatitis (AD), as both are associated with deficient barrier function.3,4 Specifically, research has implicated filaggrin mutations in the pathogenesis of ichthyosis.5,6

Identification of the filaggrin loss of function genes and their impact in AD is relatively new, as is the growing body of research linking filaggrin mutations to ichthyosis. Diminished profilaggrin or filaggrin directly contributes to a poorly formed stratum corneum and associated increased trans-epidermal water loss (TEWL).6 Furthermore, the poorly constructed barrier is associated with decreased defense against microbes and allows for increased penetration of antigens.6,7 By allowing for an increased penetration of antigens, mutations in the genes encoding filaggrin are thought to contribute directly to cutaneous inflammation associated with AD and to a lesser extent ichthyosis.7

Management

For IV, moisturizing creams are the cornerstone of management, which is largely symptomatic. Traditionally, clinicians have emphasized moisturizing ingredients that also confer keratolytic effects, such as urea or lactic acid.8 Regular bathing and mechanical scale removal have also been advocated.8 When they bathe, patients should use mild, soap-free cleansers (Cetaphil, Galderma or CeraVe, Coria).

Topical or systemic retinoids have been used in certain ichthyotic syndromes but generally are not used in ichthyosis vulgaris.8 Given the emerging evidence implicating filaggrin deficiency in the pathogenesis of ichthyosis, treatment aimed at restoration of the barrier function has been advocated in ichthyosis and related barrier defect diseases.5 Several barrier repair creams are currently available on the market. The newest, EpiCeram (Promius) is formulated with a 3:1:1 ratio of cera-

Ichthyosis Vulgaris: What’s In a Name?

Ichthyosis vulgaris takes its name from the Greek word for “fish,” and refers specifically to the scaly appearance of the presentation. “Vulgaris” is the Latin word for common. Therefore, ichthyosis vulgaris designates the common form of ichthyosis, as opposed to rare forms, such as lamellar ichthyosis, epidermolytic hyperkeratosis, and X-linked ichthyosis. Acquired ichthyosis may be associated with drug reactions or certain disease states, such as underactive thyroid, sarcoidosis, lymphoma, cancer, or HIV.
mides, cholesterol, and free fatty acids intended to optimize the repair of barrier of function. EpiCeram contains the ceramide hydroxypropyl bispalmitamide MEA. Within the normal epidermal membrane lamellar component, ceramides account for more than 50 percent (by weight) of all lipids and help structure and maintain the water permeability barrier function of the skin. The formulation also contains cholesterol; lipids (capric acid and linoleic acid); the emollients petrolatum and squalane; and the humectant glycerin. Evidence shows that topical application of ceramides, cholesterol, and lipids in a ratio of 3:1:1 results in replenishment of physiologic lipids, leading to improved barrier function in AD.12,13

Barrier repair was implemented in the management of IV in two patients. The first patient presented with extensive dry, scaly ichthyotic skin of the lateral aspects of the legs (Fig. 1) that had been only partially responsive to conventional moisturizing and hydrating measures. Because of the close clinical association between AD and IV , an empiric trial of EpiCeram BID was initiated to determine possible benefit.

The second patient had classic dry scaling ichthyosis of the lateral aspects of the legs and thickening of the palms and soles with hyperlinearity, leading to fissuring and cracking of the palms and fingertips (Fig. 2). In the preceding four winters the patient had suffered severe painful fissuring of fingertips. Empirically, EpiCeram was applied BID to determine possible efficacy.

Both patients had notable improvement in symptoms of ichthyosis at two weeks; continued use of barrier repair cream led to continued improvement. Patients were counseled to continue use for maintenance of benefit.

Dr. Bikowski is a consultant and has served on the Advisory Board and Speakers Bureau for Promius Pharma.