



Commentary

Atopic dermatitis: Part I



Atopic dermatitis is a chronic inflammatory skin disorder. The first recorded cases date back to the Roman era and have been a source of controversy and discomfort ever since.¹ The Global Burden of Disease study has ranked this disease, sometimes referred to as eczema, as the most burdensome skin disorder, as a result of its extremely high prevalence in both developed and developing nations and substantial impact on patients' quality of life.² Atopic dermatitis is also associated with a large public health burden, secondary to the costs of increased health care utilization, in addition to lost productivity and wages resulting from absenteeism and presenteeism.

Nomenclature

The old dogma, unfortunately, claimed that atopic dermatitis was only a disease of childhood and virtually all cases resolved by adulthood. We know this to be incorrect, because we see a large volume of adult patients and children whose disease never remits. Let's examine the controversies related to this condition.

The nomenclature of atopic dermatitis is by no means cut and dried, being the first controversy associated with condition. In fact, the term *atopic dermatitis* remains contentious today and varies by region, with some preferring *eczema*, *atopic eczema*, and *atopic neurodermatitis*. Still, the term as coined in the 1930s remains 90 years later, as Marion Sulzberger (1895–1983) described³:

Atopic dermatitis, while not perfection,
At least points in the right direction,
It says that here's a skin disease,
More common in families that sneeze and wheeze.

Financial burden

The cost of atopic dermatitis and the burden on society are evolving and controversial topics. With the proliferation of agents to treat atopic dermatitis on a targeted cellular level

expected within the next few years, the cost of disease has become a vital topic for decision making and the evolution of disease therapy. In 2015, atopic dermatitis was estimated to have cost the United States alone \$5,297,000,000.⁴ Cost can be quite high or as low as \$353 per quality-of-life-adjusted year, with benefits of prophylactic moisturizing being expensive but exceptionally cost effective.⁵ The price of atopic dermatitis is further measured for the quality-of-life burden, with patient eczema outcome measures and health-related quality-of-life scores indicating clinically relevant and often severe impairments.^{6,7}

Persistence of disease

Further controversy is found in the understanding of the natural history of disease. Although resolution was once assured by early childhood, persistence is noted past school age in at least 5% of patients.⁸ Persistent disease symptoms can be as frequent as every 3 days, marking atopic dermatitis as intermittent but frequent and potentially disabling.⁹

Other factors

The role of environment in disease development and symptomatology is a recently addressed controversy that is a work in progress. Human migration, climate fluctuation, and advancements in indoor climate control contribute environmentally to a changing landscape promoting increased prevalence in developed nations. This is especially noticeable in several subgroups, such as Afro-Caribbean children living in London,¹⁰ and in greater prevalence in areas of low ultraviolet light exposure and with indoor heating.¹¹

Despite the increased prevalence worldwide in developed nations over the past 40 years, only in the past 15 years have we seen true in-depth advancement of the understanding of the disease and the science of therapeutic care for the skin barrier. Before this period, people typically used euphemisms about the illness: "The itch that rashes," "if it's wet, dry it," "the wet technique," and "the dry technique."

Problems addressed

Ongoing debates exist addressing the role of therapy, prevention, and cost-benefit analysis of these same measures in atopic disease. This issue is the first of two special issues on atopic dermatitis addressing some of the incredible controversies, current thoughts, recently identified concepts of atopic dermatitis as a multisystem disease of epidemiologic importance. This issue focuses on the history, pathogenesis, and clinical diagnosis; some comorbidities (musculoskeletal and contact dermatitis); and therapeutics currently available and in the pipeline. The next issue will continue with epidemiology, recommendations for care using current guidelines, more comorbidities, and quality of life in atopic dermatitis.

Great advancement have been made in atopic dermatitis over the centuries. Kramer et al¹ review historical developments in the understanding of dermatitis, including the evolution of understanding of its causation into the modern era, when the terms *atopy* and *eczema* were serendipitously joined.

A review of typical and atypical appearances of atopic dermatitis highlights the fact that the constellation of findings we consider typical, and which allow us to make diagnoses, should be rethought to include less common but equally vexing forms of associated dermatitis and skin changes.¹²

Along with the nomenclature, which may still evolve, the understanding of the underlying pathogenesis has evolved in the past decade with the identification of filaggrin as a major player in the skin barrier of atopic dermatitis patients and immunologic defects expanding past the T helper type 1 (T_H1) and T_H2 concept to include T_H17, T_H22, and a broad range of cytokine profile alterations, including the roles of interleukin 4 (IL-4) and IL-13. Sullivan et al¹³ review the current concepts of atopic dermatitis pathogenesis, which sets the stage for the later papers on current and emerging therapeutic options in atopic dermatitis care.

Along with greater understanding of the pathogenesis has come the further acknowledgment that the skin, as the largest organ of the body, is connected to the underlying human and contributes to an overall complex of multisystem disease and comorbidities. Allergic contact dermatitis has a similar appearance to atopic dermatitis and can be a comorbidity caused by the weakened skin barrier and flare the underlying atopic dermatitis. Rundle et al¹⁴ review the role of allergic contact dermatitis in the diagnosis and care of atopic patients. Their contribution highlights the fact that the identification and care of comorbidities can have a truly meaningful effect on atopic dermatitis patients. J. I. Silverberg¹⁵ reviews some of the myriad comorbidities, specifically the musculoskeletal and neuropsychiatric associations. It remains to be seen, in the evolving therapeutic landscape, whether these comorbidities are preventable with tight disease control, which will soon be possible!

The therapeutic section in this issue includes some overarching concepts in atopic dermatitis care. First, Rangel et al¹⁶ review the role of bacterial overgrowth and infection in atopic dermatitis, highlighting the role of decolonization

in the care of the atopic patient. Udkoff et al¹⁷ have performed an extensive and insightful review of topical therapeutics, which provide the foundation of therapeutic interventions in atopic dermatitis. The use of selected therapeutics with natural ingredients is addressed by N. B. Silverberg,¹⁸ exploring part of the trend of natural ingredients for therapeutic intervention in atopic dermatitis.

Ultimately education is the foundation of skin management, and the complexity of atopic dermatitis care mandates new forums for delivery of information. Grossman et al¹⁹ discuss an exciting concept in atopic dermatitis care that is popular in Europe but was first developed by Yosipovitch in the United States—that is, the eczema school.

Last, but truly not least, Renert-Yuval and Guttman²⁰ review the smoking hot pipeline in atopic dermatitis. These are exciting times for patients with and physicians treating atopic dermatitis as we enter the era of targeted topical and systemic therapies, including biologic agents.

Conclusions

Atopic dermatitis is becoming a rich and expanding complex of conditions associated with the cutaneous form of atopy. As the multisystem aspects of disease, including comorbidities, are better understood, we can use our current and future knowledge of disease pathogenesis, associations, and therapeutics to best address the atopic dermatitis patient as an individual at greater health risk. It is hoped that patients with atopic dermatitis will achieve better mind-body health and overall health in the next few decades. The future is bright and less itchy for atopic dermatitis patients!

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