

BOTULINUM TOXIN MAY HOLD UNTAPPED POTENTIAL FOR COMMON SKIN DISEASES

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OVERVIEW:

While botulinum toxin type A has gained accolades as a wrinkle fighter, the use of this neuromodulator in dermatology represents a very small percentage of its use in the field of medicine. Now, researchers are gaining a better understanding of how botulinum toxin type A interacts with blood vessels and nerves and are encouraged by its enormous potential for future breakthroughs in medicine, particularly in the treatment of inflammatory skin diseases, such as psoriasis and eczema.

AMERICAN ACADEMY OF DERMATOLOGY EXPERT

Information provided by Erin Gilbert, MD, PhD, FAAD, a board-certified dermatologist and assistant professor of dermatology at SUNY Downstate in Brooklyn, N.Y.

SEEKING AN ALTERNATIVE TO STEROIDS

Dr. Gilbert explained that a quandary in dermatology is the widespread use of steroids in treating inflammatory skin diseases. Although topical and oral steroids boast a proven track record for curbing the bothersome inflammation of skin conditions, dermatologists are constantly looking for alternatives to balance the therapies' side effects – notably thinning and lightening of the skin and the development of new blood vessels.

While very little is known about the interaction between blood vessels and nerves in the skin, dermatologists are optimistic that new research exploring how botulinum toxin type A can influence this interaction could lead to a new therapy for chronic inflammatory skin conditions.

PSORIASIS

Psoriasis is a chronic skin condition that affects an estimated 7.5 million Americans and is the most prevalent autoimmune disease. One animal-model study conducted by Dr. Gilbert in collaboration with Nicole L. Ward, PhD, at Case Western Reserve University in Cleveland, found promising results using botulinum toxin type A to target psoriasis.¹ In this mouse-model psoriasis study, Drs. Gilbert and Ward showed that botulinum toxin injections improved the clinical appearance of psoriasis and decreased the presence of specific cells in the affected skin of the mouse, while also reducing the number of blood vessels and their adjacent nerves.

- The decreased number of blood vessels within the affected skin of the treated mice illustrates the role of nerves and blood vessels in perpetuating the appearance of an inflammatory skin disease, such as psoriasis. It brings to light the role of blood vessel and nerve communication in psoriasis and the potential role of botulinum toxin in blocking this communication.

ECZEMA

Eczema is another chronic inflammatory skin condition marked by dry, itchy skin. Atopic dermatitis – the most common form of eczema – affects millions of people, including an estimated six to 10 percent of children.

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The image shows the American Academy of Dermatology logo at the top, featuring the letters 'AAD' inside a circular emblem with 'AMERICAN ACADEMY OF DERMATOLOGY' and '1938'. Below the logo is a banner celebrating the 75th anniversary (1938-2013) with a large '75' and the text 'EXCELLENCE IN DERMATOLOGY'. The words 'News Release' are written vertically in a large, blue, serif font. At the bottom of the banner, the text 'American Academy of Dermatology' is followed by 'Correspondence' and 'Location' information, and contact details including phone, fax, and website.

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- Dr. Gilbert explained that the urge to itch is very prevalent in inflammatory skin conditions, such as eczema, contact dermatitis, rosacea and lichen simplex chronicus, and researchers are just beginning to understand disease development and progression of these conditions. Early research suggests that there could be a role for botulinum toxin in combating itch by better understanding the interaction of the vascular system in inflammatory skin conditions.

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“While there are available therapies to treat eczema and psoriasis, in some cases there may be small areas where these therapies are not effective,” said Dr. Gilbert. “In these instances, botulinum toxin injections could hypothetically provide another treatment option and potentially allow patients to stop using topical steroids for a while.”

OTHER DERMATOLOGIC USES

Botulinum toxin type A may be an option for treating other dermatologic conditions:

Burns

- Injections of botulinum toxin could promote wound healing following a burn injury.

Rheumatic conditions

- In rheumatology, botulinum toxin could help treat painful blood vessel conditions, such as Raynaud’s disease and scleroderma.
- In instances where scleroderma affected the fingertips, injections of botulinum toxin has shown to almost immediately reduce pain.

ON THE HORIZON

The newest frontier that dermatologists are researching is the topical application of botulinum toxin. Dr. Gilbert noted that several companies are developing molecules of botulinum toxin in a topical gel preparation that can target inflammation of the nerves. For example, animal studies are testing the effectiveness of the topical application of botulinum toxin for nasal allergies.

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“Based on current animal data and clinical case reports, dermatologists are hopeful that botulinum toxin could help countless patients who suffer from inflammatory skin conditions and other painful medical conditions,” said Dr. Gilbert. “Clinical studies are underway, and it is possible that FDA approval of the neurotoxin for these expanded indications could occur in the not-so-distant future.”

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Celebrating 75 years of promoting skin, hair and nail health

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¹Ward NL et al Botulinum neurotoxin A decreases infiltrating cutaneous lymphocytes and improves acanthosis in the KC-Tie2 mouse model. [J Invest Dermatol](#). 2012 Jul;132(7):1927-30.