Acanthosis nigricans (AN) is a cutaneous marker of various underlying systemic conditions. To date, no satisfactory topical therapy for this cutaneous disorder has been described. The following is a report of the successful use of a combination of 12% ammonium lactate cream and 0.05% tretinoin cream to treat AN associated with obesity.

Methods
Therapy consisted of applying 12% ammonium lactate (Lac-Hydrin® 12%) cream or lotion twice a day and tretinoin (Retin-A® Micro®) 0.05% cream once at night to the anterior neck. A small amount of tretinoin cream was applied nightly followed by the ammonium lactate cream. In the morning, only ammonium lactate was used.

Patients served as their own control in that they applied ammonium lactate alone to one side of the neck and tretinoin alone to the other side of the neck. In this small study, subjective evaluations, as well as baseline and follow-up photographs, were used to assess the outcome of the treatment.

Case Report
One of the cases treated was an 18-year-old obese man who presented with a history of several months of discoloration of the neck (Figure, A). His weight had not changed recently. He had a history of borderline hypertension. There was no family history of hormonal problems or of a similar eruption. He had taken no medicine. Physical examination revealed velvety, hyperkeratotic, tannish-brown patches on the anterior neck, lateral neck, and axilla. Other significant findings were striae on the abdomen. Otherwise, the patient appeared healthy. He was evaluated by an endocrinologist and found to be normoglycemic but slightly hyperinsulinemic (insulin level, 33.5 U/mL [reference range, 0–30 U/mL]; fasting glucose, 78 mg/dL [reference range, 60–110 mg/dL]).

The patient was advised to lose weight. At the same time, the patient was given prescriptions for 12% ammonium lactate lotion twice a day and tretinoin 0.05% cream once at night. Within 6 weeks, improvement was noted, and by 4 months, a decrease in hyperkeratosis and hyperpigmentation was apparent (Figure, B). No tachyphylaxis was observed for 12 months after initiation of treatment.

Types of Acanthosis Nigricans

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<th>Type</th>
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<tbody>
<tr>
<td>Acral</td>
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<tr>
<td>Benign</td>
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<tr>
<td>Malignant</td>
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<td>Medication induced</td>
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<tr>
<td>Mixed type</td>
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<tr>
<td>Obesity associated</td>
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<td>Syndromic</td>
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<td>Unilateral</td>
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Acanthosis Nigricans

Comment

In total, 5 patients were successfully treated with the regimen described. The combination therapy on the front of the neck was compared with the single-agent controls on the sides of the neck. Using either tretinoin or 12% ammonium lactate alone did not help the AN. Therefore, there seems to be a synergistic interaction between the ammonium lactate and the tretinoin. Generally, there was about an 85% to 95% improvement of the condition.

Regarding the mechanism of action of these 2 agents, the ammonium lactate used was a preparation of 12% lactic acid neutralized to a pH of 5.0. Lactic acid is an α-hydroxy acid that works effectively as a peeling agent. It has been used to treat a variety of ichthyotic disorders, as well as photodamaged skin. The mode of action of topical organic acids is thought to be via the release of desmogleins, indicating the disintegration of desmosomes. Retinoids such as tretinoin have a wide range of biological effects. Working via a nuclear receptor, retinoids affect cell growth, differentiation, and morphogenesis and alter cell cohesiveness. Because of these properties, retinoids as a class are used to treat a variety of cutaneous disorders. They have been shown to be effective in the treatment of such diverse diseases as acne, ichthyosis, Darier disease, psoriasis, and pityriasis rubra pilaris.

Obesity is one of a group of disorders associated with AN in which tissue resistance to the action of insulin is the common uniting factor. It appears that decreased insulin action, rather than insulin levels, is the best correlate with AN. Being that the underlying defect leading to the development of AN in this group of disorders remains to be elucidated, one cannot delineate the mechanism of action of these 2 agents in the treatment of this condition.

Further trials are needed to determine whether AN associated with other medical conditions and AN at body sites other than the neck will also benefit from this combination treatment. Furthermore, whether the use of other topical retinoids, such as adapalene or tazarotene, or oral retinoids will be as helpful or even more efficacious would prove of interest.

REFERENCES