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Ceramide-Containing Regimen Provides Superior Tolerance To Isotretinoin-Induced Side Effects And Skin Barrier Function

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Introduction & Objectives:

Skin with acne is associated with reduced ceramides, elevated transepidermal water loss (TEWL), and skin barrier disruption. As acne becomes more severe, there is an increase in TEWL and significantly reduced free sphingosines and free ceramides. Acne medications compromises skin barrier integrity and lead to side effect and quality of life consequences that results in treatment discontinuation. Oral isotretinoin is the treatment of choice for patients with severe acne and treatment-resistant moderate acne. A daily dose of 0.5-1 mg/kg/day with a cumulative dose of ≥120 mg/kg results in 85% of clinical improvement after 4 months of treatment. Isotretinoin-induced side effects related to dryness are dose-dependent and controllable by using supportive skincare. A ceramide-containing skin care regimen including cleansers and moisturizers supports the skin barrier and isotretinoin-induced side effects.

Materials & Methods:

In this single center double-blinded randomized clinical study, 126 subjects with moderate to severe acne (IGA scale, 3-4) aged 13 to 35 years naive to isotretinoin were recruited in Brazil. Subjects were prescribed 0.5 mg/kg/day of isotretinoin and randomly assigned to receive a ceramide-containing skin care or a control skin care regimen. The regimen included a facial cleanser used twice daily, facial sunscreen used in the morning and reapplied as needed, and facial cream applied freely at night alongside daily isotretinoin. Subjective and clinical tolerance (dryness, scaling, erythema, burning, itching, tightness), and overall maintenance of the skin condition (skin tone, overall appearance, skin hydration via corneometer, TEWL via Tewameter TM 300) were assessed at baseline, week 4 [W4], week 8 [W8], and week 12 [W12].

Results:

Of the 105 patients who completed the study, 51 were assigned to the ceramide-containing regimen and 54 were assigned to the control regimen. Subjects who received a ceramide-containing regimen experienced less severe isotretinoin-related side effects compared with a control regimen: 35% difference in objective dryness at W12 (P <.05), at least 88% difference in subjective tightening across all time points (all P <.01), and a 56% difference in subjective scaling at W8 (P <.01).

Compared with baseline, subjects who used a ceramide-containing regimen had a significant increase in hydration at all time points (all P <.01) and significant reduction in TEWL at W8 and W12 (P <.01). Compared with a control regimen, a ceramide-containing regimen was associated with higher hydration at W4 and W8 (13% vs 16%, respectively; P <.01) and lower TEWL at all timepoints (W4, 11%; W8, 21%; W12, 22%; all P <.05).

Of the patients who received a ceramide-containing regimen, 96.1% (n=49/51) agreed the regimen felt hydrating on the skin and helped the skin feel more comfortable, and 90.2% (n=46/51) would continue using the regimen.

Conclusion:

When using isotretinoin, a ceramide-containing skin care regimen was associated with significantly isotretinoin-associated side effects including objective dryness, subjective tightness, and subjective scaling compared with a control regimen. A ceramide-containing regimen provided superior skin barrier support compared with the control regimen, and significantly increased hydration and reduced TEWL compared with baseline despite isotretinoin-induced dryness, indicating a stronger skin barrier compared with before isotretinoin initiation.