

# Lasers' Effect on Acne Linked to Increased Cytokine

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NEW ORLEANS — Nonablative laser therapy for acne doesn't kill *Propionibacterium acnes* or decrease sebum production but instead appears to work by inducing a rapid and dramatic increase in transforming growth factor beta, Edward Seaton, M.D., and colleagues said in a poster presented at the annual meeting of the American Academy of Dermatology.

"TGF- $\beta$  is very important anti-inflammatory cytokine that plays a pivotal role in decreasing inflammation and is the first stimulus of neocollagenesis," Dr. Seaton of Hammersmith Hospital, London, said in an interview. "This is the first time a biologic explanation of lasers' effect on acne has been proposed."

Dr. Seaton used nonablative laser therapy on the foreheads of 19 subjects with mild to moderate acne who had received no previous treatment. He took before and after measurements of *P. acnes* colony count, sebum production, and several cytokines and receptors: interleukin-1 (comedogenic), interleukin-1 receptor antagonist (anticomedogenic), interleukin-10 (anti-inflammatory), tumor necrosis factor

(proinflammatory), TGF- $\beta$  (anti-inflammatory), and melanocortin-1 receptor (expressed in healthy sebaceous glands).

Each subject received one session of nonablative laser therapy (wavelength 585 nm, pulse duration 350 msec, 2 J/cm<sup>2</sup>, spot diameter 7 mm). Cytokine levels were obtained from 4-mm punch biopsies from the buttocks before laser treatment and 3 and 24 hours post treatment.

After 24 hours, there was no decrease in the number of *P. acnes* colonies on the

treated area; in fact, there was a non-statistically significant increase in the number of colonies. There was no significant decrease in the sebum excretion rate at 2, 4, 8, or 24 weeks post treatment.

After 24 hours, there was a fivefold increase in TGF- $\beta$  but no significant changes in any other cytokine or receptor levels. The TGF- $\beta$  levels had increased slightly, but nonsignificantly, by 3 hours post therapy.

In addition to inhibiting the inflammatory response, Dr. Seaton said, TGF- $\beta$  stim-

ulates collagen, proteoglycan, fibronectin, and integrin production and inhibits matrix metalloproteinase-induced collagen degradation. Thus, the benefits of nonablative laser therapy in acne seem similar to those it exerts for photorejuvenation.

"They induce collagen remodeling at the ultrastructural level and increase collagen production," he said. "The molecular mechanism of this is unclear, but it is thought to be secondary to nonlethal dermal wounding." ■

## Needle on Par With Laser for Blepharoplasty

SAN DIEGO — Electrocautery using the Colorado needle appears to be at least as effective as the UltraPulse CO<sub>2</sub> laser for blepharoplasty, Cameron K. Rokhsar, M.D., reported at the annual meeting of the American Academy of Cosmetic Surgery.

The techniques resulted in equivalent amounts of ecchymosis, edema, and erythema, as assessed by both physician and patient during the 30-day postoperative period. In addition, there were no significant differences in the width of the scar left by each method, said Dr. Rokhsar, a dermatologist in private practice in San Diego.

The study involved 12 patients, 11 of whom had an upper-eyelid blepharoplasty and 2 of whom had a lower-eyelid conjunctival blepharoplasty. After an initial incision with a 15C blade, they were randomly assigned to have the skin, orbicularis, and fat of one eye excised by the CO<sub>2</sub> laser and those of the other eye excised using the Colorado needle and electrocautery.

The CO<sub>2</sub> laser was operated with a coherent 0.2-mm beam at 150 mJ, 3.5 W, and 25 Hz. The Colorado needle has an ultra-sharp, 5- $\mu$ m tungsten tip; it was operated in this study at a cutting setting of 2 and a coagulation setting of 2.

Patients were assessed at days 1, 3, 7, 14, and 30 following surgery. At day 30, eyes treated with the CO<sub>2</sub> laser had scars 1.03 mm in width, and eyes treated with the Colorado needle had scars 1.08 mm in width. These did not differ significantly.

—Robert Finn

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