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Rosacea and small intestinal bacterial overgrowth: prevalence and response to rifaximin.

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The pathophysiology of rosacea involves dysregulation of innate and adaptive immunity, neurovascular changes, chronic inflammation, and, possibly, infections. A new pathogenic mechanism was recently suggested after a relationship was observed in a study where 46% of prospective rosacea patients had small intestinal bacterial overgrowth (SIBO). After therapy with rifaximin, a non-absorbed, gut-active antibiotic, complete resolution of cutaneous lesions in 78% of the SIBO patients was observed. Small intestinal bacterial overgrowth may alter immunity and trigger rosacea by increasing tumor necrosis factor- α or other cytokines, suppressing interleukin-17, and stimulating the Th1-mediated immune response. Furthermore, gut bacteria have been shown to mimic immunogens associated with extraintestinal disease (ie, multiple sclerosis).

The aim of this pilot study was to determine the prevalence of SIBO in patients with rosacea seen in a gastroenterology clinic and determine the efficacy of rifaximin in patients with indirect evidence of SIBO (i.e., a positive lactulose breath test). The study protocol received institutional review board (Sterling IRB, Atlanta, GA) approval. Most rosacea patients were identified during physical examination before receiving a screening colonoscopy. Rosacea was diagnosed by a dermatologist in 57 cases. Four patients with medicine-refractory ocular rosacea were referred by ophthalmologists. Two cases of rosacea were diagnosed by the investigator. In addition to the ocular cases (3 had facial erythema), 9 had papulopustular and 50 had erythematotelangiectatic rosacea. All patients underwent a lactulose breath test, with a positive test result for SIBO defined as an increase in hydrogen or methane levels >20 ppm from baseline within 90 minutes. Prevalence of SIBO was compared to 2 control groups. Patients with SIBO received 400 mg rifaximin (Xifaxan®; Salix Pharmaceuticals, Inc, Raleigh, NC) 3 times daily for 10 days. Patients completed a self-report questionnaire using a 4-point rosacea improvement scale 10 days after ending rifaximin therapy. A repeat physical examination was performed in 70% of patients treated with rifaximin.

A total of 32 of 63 patients (51%; 6 males and 26 females) with rosacea were diagnosed with SIBO compared with 7 of 30 general population controls (23%; relative risk, 2.1; 95% confidence interval, 1.1-4.3; $P = .02$) and 3 of 30 completely healthy controls (10%; relative risk, 5.0; 95% confidence interval, 1.7-15.1; $P < .001$). Of the SIBO patients, 28 were treated with rifaximin: 46% reported cleared or markedly improved rosacea, 25% reported moderately improved rosacea, and 11% reported mildly improved rosacea. All 4 patients with ocular rosacea and SIBO reported marked improvement. Rosacea was unchanged in 18% of patients.

In this study, a subset of rosacea patients with indirect evidence of SIBO was identified and a significant majority improved after treatment with a non-absorbable antibiotic. A study screening rosacea patients in a dermatology clinic using a lactulose breath test for evidence of SIBO and a double blind clinical study to determine the efficacy of rifaximin in these patients would greatly contribute to an understanding of the potential impact of these findings.