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Severe Acne in Female Patients Treated with Isotretinoin is associated with Dysbiosis and its Consequences

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ABSTRACT

Small intestinal bowel overgrowth (SIBO) is caused in the jejunum by bacterial proliferation. Such bacteria consume unabsorbed disaccharides due to mucosal enzymatic defects or overly sweetened food intakes. Drug-induced mucosal atrophy is a part of the long list of potential etiologies. SIBO is associated with non-serious symptoms such as bloating, diarrhea or constipation, stomach pain and often extreme malabsorption and its effects (e.g. vitamin D or unsaturated fatty acids, deficiency of anaemia, decreased immunity and exhaustion).

In clinical practice, SIBO diagnosis relies primarily on hydrogen, methane or volatile organic compound (including methylacetate) breathing tests. When SIBO is severe and prolonged, the probability of finding volatile organic compounds in the exhaled air is increased. For these cases, the prevalence of related diseases increases: such as depression, type 2 diabetes mellitus, overweight and steatosis of the livercancers, or chronic HPV infections.

Human enterotypes were divided into three groups. Acne-related group which includes PAis the enterotype called Prevotella. It contains dental caries bacteria, chronic rhinosinusitis or periodontitis. In the aggressive parodontal microbiome PA and Acinetobacter baumannii are frequently detected simultaneously. Acinetobacter baumannii favors epithelial cell apoptosis, and thus mucosal atrophy.

Propionibacterium acnes (PA) are often implicated in acne, and 82.8 percent of lesions can be identified by PCR. Species of propionibacterium can bind to intestinal mucosa. They secrete hyaluronidase and can change the mucosa of the intestine. Microbiomes can associate multiple species of aggressive bacteria, such as PA or Acinetobacter, and cause synergic destructive and atrophic effects on mucosa.

Acne patients can receive isotretinoin which is well established in the mucosal side effects profile. The probable incidence of ulcerative colitis further reflects this mucosal toxicity. Isotretinoin has also an effect on the renewal of stem cells. Should there be an isotretinoin-induced mucosal atrophy, a long-term or even permanent impact may be expected; leading to serious effects, frequent gastroenterology visits and explorations, and thus to health expenditure. Irritable Bowel Syndrome is known to cause substantial health costs.
Severe acne is mainly caused by Propionibacterium acnes (PA), and is treated with isotretinoin at times. Species of propionibacterium may alter the mucosa of the intestines and isotretinoin can cause side effects on the mucosa. We investigated the association between severe acne (treated or not with isotretinoin) and dysbiosis and its consequences.

Keywords: Malabsorption; Isotretinoin; Breath test; Stem cells; Apoptosis

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