The Gut-Skin Connection : Using Gut Microbiome Tests to Treat Acne

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BACKGROUND

- Acne is a chronic inflammatory skin disease that affects both adolescents and adults.
- While functional medicine acknowledges that there is a "gut-skin connection", few studies have assessed the microbiome of acne patients.
- After seeing hundreds of functional medicine gut microbiome tests, Dr. Greenberg felt that her acne patients had a pattern of higher levels of *Helicobacter pylori*, Candida and protozoa than her other dermatological patients and has achieved high success rates of clearing acne by treating these conditions.

OBJECTIVE

The objective was to analyze the microbiome of acne patients using functional medicine tests (stool tests and organic acid tests (OAT)) to reveal if there are specific patterns of dysbiosis in acne, including but not limited to *H. pylori, Candida* and protozoa.

METHODS

Patients:

- 36 of the most recent patients with an ICD10 diagnosis code of "acne vulgaris" or "acne unspecified" and who had performed functional medicine tests (stool test + organic acid test (OAT)) were selected from The Center for Integrative Dermatology patient database.

Design study

- **Stool tests:** 36 GI MAP stool tests by Diagnostic Solutions Laboratory (DSL), plus one Doctor's Data (DD) GI360 test were used in the evaluation.
- **Organic Acid Tests (OATs):** 34 OATs (urine) from Great Plains Labs (GPL) and 1 Genova Diagnostics Metabolic Panel (urine) were used in the evaluation.
- **Tests**
  - 33 patients had 1 GI MAP + 1 GPL OAT
  - 1 patient had 1 GI MAP + 1 Genova Metabolic panel
  - 1 patient had 1 GI MAP, 1 DD GI360 + 1 GLP OAT
  - 1 patient had 1 GI MAP

Assessments

- Stool tests were used to assess bacterial (ex: *H. pylori*), parasitic (ex: protozoa), and fungal microbiome (ex: *Candida*)
- OATs were used to assess fungal microbiome (ex: *Candida*).
- Data was compared to overall data from Biocanic and Diagnostic Solutions Laboratory

Research questions

- Are there higher levels of *H. pylori, Candida* and protozoa in acne patients?
- Are there additional patterns of dysbiosis that can be identified in acne patients?

Analysis

- We present combined results for the 36 patients' stool tests and OATs
- Analysis was performed by hand by Dr. Greenberg as well as by Biocanic software. Biocanic is a HIPAA compliant Software as a Service (SaaS) integrative health and medicine platform for practitioners. Biocanic automatically processes and extracts the data from functional lab tests and aggregates the data into a cloud storage system. All lab data has been de-identified in accordance with HIPAA regulations and analyzed using Microsoft Excel. The following criteria were used:
  - *H pylori*
    - ☑ DSL: either present [any finding that's not "dl"] or high [any finding that's >1.0e3]
  - Parasites
    - ☑ **DSL:** any finding that's not "<dl" for protozoa: ***Giardia, Entamoeba histolytica, Cryptosporidium, Blastocystis homini, Chilomastix mesnili, Cyclospora spp., Dientamoeba fragilis, Endolimax nana, Entamoeba coli, Pentatrichomonas hominis***
    - ☑ **DD:** Any positive finding for ***Cryptosporidium (C. parvum and C. hominis), Entamoeba histolytica, Giardia duodenalis***
  - Candida
    - ☑ **DSL:** Present [any finding that's not "<dl" for *Candida albicans* or *Candida* spp]; or high [any finding that's >5.0e2 for *Candida albicans* or
    - ☑ >5.0e3 *Candida spp*]
    - **GPL:** Present Females Arabinose >15; Males Arabinose >10. High Females Arabinose >29; Males Arabinose >20

Comparison Data

- The 36 acne patients test results were compared against Diagnostic Solutions Laboratory datasets, Biocanic datasets and published research.
- **Biocanic:** a total of 2,940 GI-Map (Diagnostic Solutions Laboratory) were analyzed by Biocanic for comparison data for this poster.
- **DSL:** a total of 18,390 ranging from Jan-March of 2021 were analyzed by DSL for comparison data for this poster.
- **Published Research:** PubMed was searched to find healthy control data for comparison:
  - ***H. pylori Published Research (1):*** Hooi, James KY, et al. "Global prevalence of *Helicobacter pylori* infection: systematic review and meta analysis." Gastroenterology 153.2 (2017): 420-429.
  - ***Candida Published Research (2):*** Standaert-Vitse, Annie, et al. "*Candida albicans* colonization and ASCA in familial Crohn's disease." American Journal of Gastroenterology 104.7 (2009): 1745-1753.

Abstract:

Acne is a chronic inflammatory skin disease that affects both adolescents and adults. While functional medicine acknowledges that there is a "gut-skin connection", few studies have assessed the microbiome of acne patients. The objective was to analyze the microbiome of acne patients using functional medicine tests (stool and organic acid tests) to reveal if there are specific patterns of dysbiosis in acne, including but not limited to H. pylori, Candida and protozoa. Thirty six of the most recent patients with an ICD10 diagnosis code of "acne vulgaris" or "acne unspecified" and who had performed functional medicine tests (stool test + organic acid test (OAT)) were selected from The Center for Integrative Dermatology patient database. Results were that 94% of patients had Candida elevated or high, 92% had H. pylori present and 53% had protozoa present. 47% of patients had all three conditions and 44% had at least two conditions. This research demonstrates that the gut microbiome of acne patients has higher levels of H. pylori, Candida and protozoa than the general population.

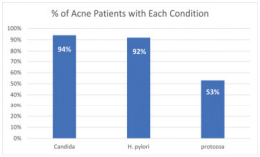
RESULTS

Patient Demographics

- Total of 36 patients: 28 females, 8 males
- Ages 13-40; Mean=25 years old; Median=25 years old

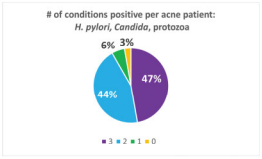
Gut Microbiome Results

- *Candida* present in (34/36) 94%
- *H. pylori* present (33/36) 92%
- Protozoa present in (19/36) 53% (and 95% of those had *H. pylori*)

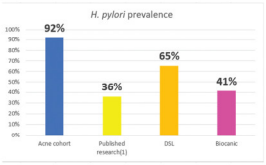


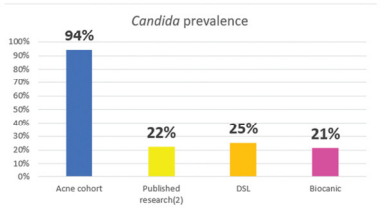
Candida, H. pylori and protozoa in acne patients:

- 47% (17/36) have all 3 conditions
- 44% (16/36) have 2/3 conditions
- 6% (2/36) have 1/3 conditions
- 3% (1/36) have 0/3 conditions

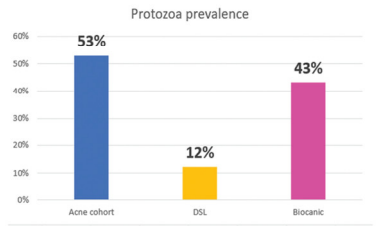


Comparison of Acne Cohort to other populations: H. Pylori





Candida



Protozoa

Limitations

It would be helpful in the future to:

- compare against a non-acne age-matched cohort from the same geographic regions
- show how the gut microbiome measures shifted after treatment

CONCLUSION

- **The gut microbiomes of acne patients show higher levels of *H. pylori, Candida* and protozoa than the other general cohorts analyzed.**
- It is possible to use functional medicine tests in acne patients to assess the gut microbiome.
- These functional medicine tests are being used in clinical practice at the Center for Integrative Dermatology to successfully treat the root cause of acne by addressing these gut dysbiosis issues.
- Further studies are needed to compare acne to non-acne patients to evaluate the potential of using gut microbiome testing as a diagnostic approach treating patients with acne.