Humans and Helminthes: An Alternative Nutrition Therapy

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“Parasites are master manipulators of the host immune system, often inducing a long-lasting asymptomatic form of infection (Zaccone et al. 2006).”

Hygiene Theory

Reduced exposure to microorganisms during childhood may contribute to abnormal immune regulation.

Seppa (2011)
Review of Literature

• Worming Your Way to Better Health, Seppa, N (2011)
• Inhibition of Type 1 Diabetes in Filaria-Infected Non-obese Diabetic Mice, Hübner, M. P., Thomas Stocker, J. J., & Mitre, E. (2009)
• Population-Based Cohort Study, Bager, P (2011)
Review of Literature


- Parasitic worms and humans co-evolved
- Correlation between increased autoimmunity & reduced infection
- Case studies
  - Wheezing toddlers in Ethiopia
  - Argentinean MS patients
  - Schoolchildren in Gabon Africa
Review of Literature

Inhibition of Type 1 Diabetes in Filaria-Infected Non-obese Diabetic Mice, Hübner, M. P., Thomas Stocker, J. J., & Mitre, E. (2009)

– Aimed to determine whether worm infection protects against type-1 diabetes
– Th 1 cells morph to Th 2 cells
– Antigenic shift is dependent on regulatory T cells interleukin-10, CD4+, CD25+, and Fox3P+
Review of Literature

Probiotic Helminth Administration in Relapsing–remitting Multiple Sclerosis: A Phase 1 Study, Fleming, J. O, et al

– Safety an efficacy test

– Subjects claimed the worm solution tasted a sports drink.

– Results show mild GI symptoms as side effect
Review of Literature

Population-Based Cohort Study, Bager, P (2011)

– Followed all children born in Denmark between 1995 and 2008 (924,749).
– Those with autoimmune disease and no Mebendazole perscription totaled 10,352.
– Rate Ratios declared the incidence was not significant.
Review of Literature


– Potential Benefits
  Less attrition in studies
  Disease selective therapies

– Risks
  Selection of the right helminth
  Those immunocompromised
Literature Discussion

- Most studies confirm safety and efficacy
- Must uncover the helminth’s mechanism
- Methods of delivery.
Common Forms and Dosages

- A wide range of helminth pathogens can be immunoprotective; thus, forms and dosages vary in helminth studies and treatments.

- In general, 50-50,000 parasites are administered orally or parenterally for the treatment of autoimmune disorders.
Side Effects

• More research needs to be completed to determine all of the potential side effects of helminth treatments.
• Choice of parasite is important in preventing side effects.
Conclusion

• Helminthes and humans have co-evolved shaping our immune system
• Continued research will hopefully determine the mechanisms responsible for the protection against autoimmunity with helminth infections.
• Drinking a glass of worms may be the future treatment for autoimmune disorders