Immunomodulatory properties of Echinococcus multilocularis: friend or foe?

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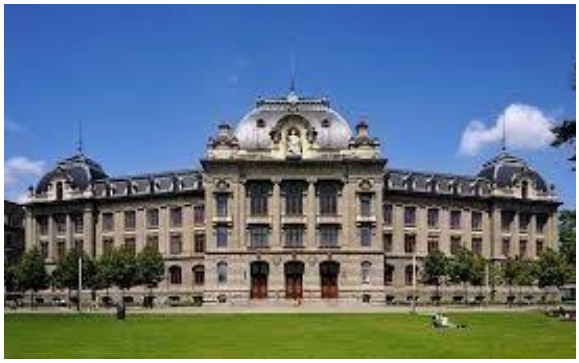
Abstract

Alveolar echinococcosis (AE), a very severe zoonotic helminthic disease in humans, is characterized by a chronic and progressively developing hepatic damage caused by the continuously proliferating parasite tissue (metacestode) of Echinococcus multilocularis (E. multilocularis), clinically mimicking a slowly growing and metastasizing liver cancer. Immune tolerance and/or down-regulation of immunity are a marked characteristic increasingly observed when disease develops towards its chronic (late) stage of infection in both humans and in experimentally infected mice. AE is fatal if not treated appropriately, but the current chemotherapy based on benzimidazoles is far from optimal, and novel options for control are needed. Future research should focus on the elucidation of the crucial immunological events that lead to anergy in AE, and focus on provid¬ing a scientific basis for the development of novel and more effective immunotherapeutical options to support cure AE by abrogating anergy, anticipating also that a combination of immuno- and chemotherapy could provide a synergistic therapeutical effect. On the other hand, in order to survive peri-parasitic immune effector mechanisms, the parasite metacestode is covered by an outer laminated layer (LL) that confers protection against host immune responses. Our preliminary results showed that infection with E. multilocularis did have a beneficial effects in mice suffering from experimentally induced colitis, thus parasite metabolites exhibit a high potential for treating non-infectious immune disorders.



Biography:

Junhua Wang is currently working in the Institute for Infectious Diseases, University of Bern and previously worked at Institute of Parasitology, Department of Infectious Diseases and Pathobiology, Vetsuisse Faculty, and Department of Visceral Surgery and Medicine, Inselspital, University Hospital of Bern, Institute of Pathology, University of Bern, Bern, Switzerland, and Institute of Parasitology, University of Zurich, Zurich, Switzerland.

Speaker Publications:

1. "Molecular survival strategies of Echinococcus multilocularis in the murine host."
2. "The correlations between Th1 and Th2 cytokines in human alveolar echinococcosis."
3. "Deletion of Fibrinogen-like Protein 2 (FGL-2), a Novel CD4+ CD25+ Treg Effector Molecule, Leads to Improved Control of Echinococcus multilocularis Infection in Mice."
4. "Elevated incidence of alveolar echinococcosis in immunocompromised patients."
5. "Depletion of FoxP3+ Tregs improves control of larval Echinococcus multilocularis infection by promoting co-stimulation and Th1/17 immunity."

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