

HELMINTHS AND AUTOIMMUNITY: THE PECULIAR CASE OF *TAENIA SOLIUM*

To the Editor:

Zeller et al. [1] recently presented a case in which the patient suffered from an autoimmune disease (systemic lupus erythematosus) and, at the same time, harbored intestinal parasites, specifically the tapeworm *Taenia solium*. The way these two pathologies might interact and the possible consequences of the presence of this parasite in the course of the autoimmune disease are discussed in the article as well as in another by Versini et al. [2], published in the same issue.

According to Zeller et al. [1], the patient suffered “massive infestation,” suggesting that more than one individual of the tapeworm was found [see Figure 1]. The authors do not specify either the diagnostic method carried out to identify *T. solium*, or whether every single individual was identified. It is not known where the patient became infected, although the authors point out that the patient originated from Thailand, a country where the three human *Taenia* species coexist (*T. solium*, *T. saginata* and *T. asiatica*) [3], and it is even possible that more than one species coexists in the same human intestine, since a woman harboring both, *T. solium* and *T. asiatica*, was identified in that Asian country [3].

The fact that the patient harbored specifically *T. solium* is actually quite troublesome since, so far, *T. solium* is the only species that in addition to causing taeniasis (the presence of the intestinal adult stage in the intestine) may also cause cysticercosis (the presence of the extra-intestinal larval stage or cysticercus), a sometimes fatal disease when the cysticerci are located in the central nervous system. *T. solium* taeniasis is acquired when humans eat raw or undercooked pork meat/viscera containing the infective cysticerci. However, to acquire cysticercosis, humans

have to accidentally ingest the eggs shed in the feces of the human carriers of the adult stage. These eggs contaminate hands, water, vegetables, etc. Therefore, the carriers of the adult tapeworm, as in this case, and due to autoinfection, are at high risk of suffering not only taeniasis but also cysticercosis. In fact, up to 40% of people with taeniasis also suffer cysticercosis. Some of the psychotic features the patient presented (confusion, visual hallucinations) could match the presence of cysticerci in the brain (neurocysticercosis). However, the computed tomography (CT) of the head that was carried out apparently did not reveal the presence of cysticerci. This technique is less sensitive than magnetic resonance imaging (MRI) when the cysticerci are still alive and therefore not calcified [4]. MRI is also able to show cysts in specific locations (cerebral convexity, ventricular ependyma) much better than CT. Besides, it is not known whether the patient might have harbored *T. solium* cysticerci in other locations (eyes, muscles, bones, liver, lungs, etc).

Therefore, and specifically in the case of *T. solium*, before evaluating the protective-ness of the presence of the intestinal stage against autoimmune diseases, the presence of extra-intestinal cysticerci should be investigated. Otherwise, the immunoreaction that cysticerci provoke [5] would not be, wrongly, considered in immunomodulation processes.

Finally, and taking into account that the presence of the carrier of the adult stage poses the greatest risk of acquiring cysticercosis [6], people living or working close to the patient should also be examined.

M.T. Galán-Puchades MD

Dept. of Parasitology, Faculty of Pharmacology, University of Valencia, Valencia, Spain

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To the Editor:

We would like to thank Dr. Galán-Puchades for her helpful comments on our paper [1]. The purpose of the paper was to demonstrate the possible connection between autoimmune diseases and Helminths infections. The diagnosis of systemic lupus erythematosus (SLE) was made according to the SLLIC criteria, while the diagnosis of *Taenia solium* was made by an infectious disease specialist. We are aware that *T. solium* can cause CNS manifestations, but, as Dr. Galán noted, the CT scan was normal, notwithstanding the fact that an MRI scan was not done.

We believe that this patient suffered from a helminthes infection and SLE. The prior literature has described a protective effect, but our case demonstrated an opposite effect, which could possibly be explained by the pulse steroid treatment the patient received which unmasked the infection.

L. Zeller MD^{1,3} and M. Abu-Shakra MD^{2,3}

Departments of Medicine ¹F and ²D, and ³Autoimmune Rheumatic Diseases Unit, Soroka University Medical Center and Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel

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“Do not dwell in the past, do not dream of the future, concentrate the mind on the present moment”

Buddha, also known as Siddhārtha Gautama, was a sage on whose teachings Buddhism was founded. He is believed to have lived and taught mostly in northeastern India sometime between the sixth and fourth centuries BCE