

## The geo-sanitary conditions of taeniasis carriers, migration and the re-emergency of neurocysticercosis.

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### Abstract

**Geo-sanitary conditions are determinant to understand the dynamics of parasitic diseases and their environmental context. Taeniasis and its clinical impact on neurocysticercosis accurately represents an example of how human migratory processes have reconfigured the epidemiological map, making neurocysticercosis had a global impact and not only in the classical endemic regions. Although we have advanced our current understanding of the life cycle of *Taenia solium* and *Cysticercus cellulosae* for diagnostic purposes and new therapeutic alternatives, but prevention remains as a challenge.**

**All diagnostic strategies aimed at the identification and timely treatment of asymptomatic carriers and the networks involved in their life cycle will be determinant for this preventable disease not to continue as a neglected tropical disease.**

**Keywords:** Taeniasis, Neurocysticercosis, Geo-epidemiology.

*Accepted on March 22, 2017*

Geo-sanitary conditions in public health are a determining factor in understanding that disease processes are highly dynamic and respond to the conditions of the environmental context. Beyond the biological, immunological and therapeutic scenario in the management of the parasitic diseases which affect the human, the epidemiological conditions that involve the life cycle of the parasite are determinant to the behavior of the disease; such is the case of the Taeniasis and its clinical impact on neurocysticercosis. This is identified punctually how the sanitary conditions can generate the dissemination of the disease by the contamination with feces of human carriers.

The migratory processes that occur nowadays throughout the world are a key element to understand the appearance of re-emerging foci in sites that historically were uncommon; this geo-sanitary phenomenon has changed the epidemiological perspective, which promotes the search for preventive strategies in immigrant populations and in the place where they are inserted socially. A recent study of coproparasitological examination in migrants identified that 11% of individuals may be asymptomatic carriers of some type of *Taenia* [1].

These demographic conditions have reconfigured the geo-sanitary map for classical parasitic diseases, leading to appear of re-emergencies derived from human migratory processes.

Is well known the role of *Taenia solium* and its relation to the larval state of *Cysticercus cellulosae* in which is identified the intermediate host (pork) and the human as the final host (reservoir). Once oncospheres are ingested they go through the intestinal wall and are lodged in different tissues to develop the cysticercus (*cysticercus cellulosae*), affecting more commonly the subcutaneous tissue, and in sequence the brain and the eye.

The neurological complications of cysticercosis may express all neurological syndromes from epilepsy and hydrocephalus to pseudotumoral behavior and even cysticercosis encephalitis.

The diagnostic criteria nowadays are well defined as absolute

(obvious parasite demonstration, major criteria, minor criteria, epidemiological criteria).

Even so, sensitivity and specificity have been improved through molecular biology and immunoassay tests such as enzyme-linked immunosorbent assay (ELISA), which allow pharmacological treatment to be designed in a timelier manner and neurosurgical treatment when it is required.

However, the challenge remains and should be reoriented to the timely detection of asymptomatic carriers who are able to disseminate Cysticercosis, as well as to improve control and sanitary conditions in vulnerable populations and particularly in migrant groups.

One of these efforts has been focused on the analysis of clinical history and stool examination, through studies such as ELISA and recently the study of enzyme immuno-electrotransfer blot (EITB) that has shown a greater sensitivity and specificity [2].

The identification of coproantigens (CoAg) through ELISA has allowed to identify the variants of *Taenia* in endemic areas, reason why this strategy continues being effective for the identification of Taeniasis by *Taenia solium* in humans [3].

Our group has generated different proposals to improve the understanding and management of neurocysticercosis. Particularly in the diagnostic strategies, management guidelines, endoscopic treatment and the risk/benefit balance of pharmacological treatment [4-10].

Despite all technological advances and pharmacological strategies to minimize the effects of neurocysticercosis, the geo-sanitary perspective and the epidemiological challenge continues in force. The World Health Organization (WHO) estimate that nearly 50 million people may develop neurocysticercosis, since has become a global disease because of immigration from endemic regions.

If we consider that Cysticercosis is an eradicable and

preventable disease, it is necessary that the scientific community, veterinary control experts and those responsible for health programs promote the diagnosis of asymptomatic carriers. This re-emerging condition now throughout the world needs to be addressed in a frontal and definitive way to make the neurocysticercosis disappear from the list of the World Health Organization as a neglected tropical disease [11].

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