

Epidemiological, social, and control determinants of Chagas disease in Central America and Mexico - Group discussion

Rodrigo Zeledón⁺, Carlos Ponce*, Jorge F Méndez-Galván**

Laboratorio de Zoonosis, Escuela de Medicina Veterinaria, Universidad Nacional, Heredia, Costa Rica *Secretaría de Salud, Tegucigalpa, Honduras **Secretaría de Salud, Mexico D.F.

The existence of Chagas disease in Central America was reported for the first time in El Salvador in 1913, four years after its discovery in Brazil. At that time only *Triatoma dimidiata* was known as a vector, but two years later, in the same country, *Rhodnius prolixus* was discovered, which is a more efficient vector and now considered to be an introduced species in the area.

Several epidemiological and clinical studies have shown that, with the exception of Belize, the disease is endemic in all Central American countries and in certain areas has become a serious public health problem. This led the health authorities of the countries to launch the Central American Initiative for the control of Chagas disease in 1997. Since that date, several actions have taken place, aiming to eliminate *R. prolixus* from the region, lower vectorial transmission by *T. dimidiata*, and control transmission by blood transfusion.

Summary of the discussion of Dr Ponce paper

Dr Zeledón - I would like to add two important epidemiological facts related to the situation in Nicaragua: the recent finding of *R. pallescens* in the Department Rio San Juan, on the border with Costa Rica, and the presence, in some departments of the northeast and south-east of the country, of *T. ryckmani*.

The presence of a species of *Rhodnius* in Rio San Juan, led the Ministry of Health personnel to spray 2000 houses with insecticide convinced it was *R. prolixus* until it was realized that the species present in the area was actually *R. pallescens*. The latter has been found mainly in the peridomiciles but in at least four houses some nymphs were also found indoors, suggesting an initiation of colonization of those houses. A serological survey in school children yielded 6.7% of positive tests and in spite of the occasional finding of *T. dimidiata*, *R. pallescens* seem to be an important vector in the area. On the Costa Rican side, *R. pallescens* is only a visitor of houses and the seroprevalence there, also in school children, is low (0.24%). In both sides across the border, *R. pallescens* has been found in palm trees (*Attalea butyracea*).

In relation to *T. ryckmani*, the species is becoming a frequent visitor inside and outside houses where adults are attracted to lights. In Guatemala, the species has been found living in bromeliads of the genus *Tillandsia* in semiarid regions of the country and in a few instances it is able to colonize human dwellings. The bromeliads where this bug breeds, are used locally for decorations and are also exported abroad and this could become a mechanism for dissemination of the insect.

Another aspect worth mentioning is in reference to environmental management methods for the control of *T. dimidiata* as was recommended in a technical workshop on the species held in San Salvador in 2002. A pilot project was implemented in Costa Rica by modifying the environment around a group of houses in order to destroy the peridomestic habitats and make difficult the colonization of the bug in those areas, with very promising results.

Going back to the hypothesis that *R. prolixus* is an exotic species in Central America, the idea originated in 1995 in the ECLAT meeting of Santo Domingo de los Colorados, Ecuador. After the meeting, Dr Ponce was able to transmit the idea of a possible elimination of the species to the Minister of Health of Honduras who meanwhile was able to convince the health authorities of the other countries to include this premise as an objective of the Central American Initiative for the control of Chagas diseases, which was created, also at the request of Honduran authorities, two years later. This is a good example of a scientist transferring knowledge and advising a politician, leading to the political will of converting it into action.

Dr Ponce - It is possible that *R. prolixus* could disappear from Central America within the next two years.

Dr Silveira - It is unacceptable as an aim of the Central American Initiative just the reduction of the infestation by *T. dimidiata*. Reduction to which level? Does it correspond to the control of the domiciliary transmission or just to the interruption of transmission? In the case of autochthonous vectors the "possible" level of control of the vector is the elimination of its intradomiciliary colonies avoiding its re-colonization through common entomological surveillance actions.

Dr Ponce - I agree.

Dr Silveira - Was the protocol for interventions on *R. pallescens* in Panama, proposed by a team during an international evaluation in that country, finally applied?

Dr Ponce - Not yet due to changes in personnel in the country but is being considered at present.

⁺Corresponding author: rodrigozeledon@ice.co.cr
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Dr Pinto Dias - Has the malaria campaign in El Salvador had a role in the disappearance of *R. prolixus* in the country?

Dr Ponce - It is a combination of two things: insecticide spraying and house improvement (property right changes, currency remittance from abroad, and new settlements in rural areas).

Dr Pinto Dias - What is the etiological treatment you are using in children?

Dr Ponce - Benznidazole and nifurtimox are currently used and in this respect I would like to stress the role played by "Doctors without borders" in Central America. Serological surveys in children less than 15 years old are being carried out in the area.

Dr Storino - I would like to emphasize the focalized nature of transmission and to suggest performing ECG's in persons older than 40 years and correlate the findings with serology.

Dr Ponce - New protocols for field studies are now under preparation.

Dr Ault - I am interested in community participation in relation to housing facilities and how this is related to the different ethnic groups.

Dr Ponce - Makes reference to the native origin of certain plant materials for building houses such as grass or palm thatched roofs, which may become risk factors.

Dr Méndez-Galván - Calls attention to the need to learn more about prevalence, morbidity and mortality of the disease in the area. Reliable information is needed for the policy makers to transform it into actions. Measuring and pondering risk factors in transmission is needed.

Dr Torrico - How is the epidemiological vigilance done in Central America? Does the community participate in it? Is there any environmental impact due to the modification of houses and what is the acceptance on the part of the inhabitants? What are the clinical characteristics in acute and chronic cases?

Dr Ponce - There are agreements with the communities to define the improvements to the houses with a minimum of environmental impact. In general, the acceptance is very good with the necessary cultural adjustments. Community participation in the intervened areas is broad, not only in the epidemiological surveillance, but also in relation to the insecticide spraying, etiological treatment, and dwelling improvement. All the clinical and pathological features reported in South America for acute cases are seen in Central America and Chagas cardiopathy is common in endemic areas but megacolon and megaesophagus cases are uncommon.

Dr Junqueira - How do you manage the possible cross reactions with *Trypanosoma rangeli*?

Dr Ponce - With the reagents we are using now, there is no problem in this respect because there are no cross reactions.