



Tackling neurocysticercosis in rural Colombia

A project funded by the Promising Strategies Program

The IBE Promising Strategies Program is now 11 years old and is one of the most successful of all IBE's initiatives. Set up in 2006, as a means of supporting IBE chapters through the provision of financial support for projects aimed at improving the quality of life of people with epilepsy, to date, 81 projects in 38 countries have received a total of US\$330,000 in support. Two new projects were selected by the International Executive Committee for funding in 2017. This issue of IE News features the project in Colombia. In the next issue we will present the second project, which is taking place in Tibet, China.

Neurocysticercosis is the first cause of epilepsy in the Caribbean region. How an epilepsy center in rehabilitation can help prevention in epilepsy along with the State **Health problem**

A common scene in poor towns is the lack of running water, sewage system and no faeces treatment at all, which are found everywhere in the streets or in appalling garbage collectors. The pigs roam on the streets, eating faeces and rubbish, that can have copious amounts of fertile eggs of the taenia solium (tapeworm). In the pigs' intestine, the eggs develop into moveable larvae that can pass through the intestine wall and reach the blood stream. Soon, these larvae reach the muscles and can stay there for a long time.

Humans can then eat this contaminated meat, and once consumed, the parasite follows the same cycle as in the pig. However, in this case, the larvae go directly through the blood stream to the brain, where they can remain as cysts for a long time until they are destroyed by the body's defenses.

When this happens, strange substances are emitted from the cysts that irritate the brain. A focal seizure occurs which can generalize to tonic clonic. But it can also lead to a cognitive deficit.

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If seizures repeat, we have real epilepsy. We know that about 40% of patients with neurocysticercosis will develop epilepsy.

Why we fight this disease

It's easy to understand how an invasion of many cysts into the brain causes irritation and difficulties in mental faculties, which

can be permanent. When a child or an adolescent is attacked by the parasite, they are potentially going to suffer mental retardation and permanent epilepsy, especially when the cysts are situated in the meningeal space, producing hydrocephalus and dementia. These patients consult FIRE, the IBE chapter in Colombia, looking for special education because they are refused admission to normal schools.

These children, adolescents or young adults, could avoid these terrible problems by fighting the cause i.e. lack of sanitation and contamination of pork.

Due to the inability of the Colombian Government to tackle this task alone, we believe that we must initiate a campaign to get rid these ignominious and degrading conditions in which the poor people live and, at the same time, prevent cognitive problems arising, which is a significant financial burden to the Government and to their families. It's a three-part effort of the government (mayor of the town), private initiative (FIRE) and the community.

Situation in the Caribbean Coast

Colombia is a typical emerging country. There are regions with very good development and high per capita incomes, and other parts with very low income and a defective and precarious standard of living. It is in latter regions, especially on the Caribbean and Pacific Coast, where epilepsy has a higher prevalence and incidence, and where the mental and cognitive disturbances are frequently the consequence of cysticercosis.

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The Government alone is incapable of solving the sanitation problem; the inhabitants are almost totally defenseless in organizing it themselves; so, it's necessary that entities such as FIRE provide assistance.

Project to eradicate cysticercosis

We have already planned the following work-schedule steps:

1. Introduction of the project with FIRE personnel (doctors, nurses, programmers, administrators) and local volunteers.
2. A survey in every home in the small town of Mahates, located about an hour from Cartagena, which has 7,000 dwellings and a population of approximately 23,000.
3. Meetings with community leaders to discuss the project.

4. Interviews with school directors to explain the project and to encourage them to involve 11th grade students, as they have an obligation to be involved in social activities in the community.
5. Door to door interviews carried out by the leadership of FIRE, and previously trained students, over two Sundays.
6. Analysis of results.
7. Provide 250 mgs. of Albendazole to the 23,000 inhabitants (the entire population - children and adults) with the collaboration of health authorities of the town (loudspeakers and pamphlets). We assume that the entire population will become free of Taenia Solium. This needs to be repeated every six months.
8. Construction of a communal herd of 150 piglets (purebred) in substitution for the vagrant pigs. This will be done, by agreement, with the owners of the old and contaminated pigs, who will receive pure-bred animals in exchange. Of course, the vet is central in destroying the infected animals.
9. Control by authorities.
10. Replication in every endemic region of Colombia.

Our results

Steps 1 to 6 have already been completed.

Step 7 has partially been completed, since it is necessary to obtain a further 23,000 pills of Albendazole.

Step 8 is extremely important and, to achieve this, we may need to obtain further funds which, added to finances provided by the municipality, would let us complete the project in Mahates.

It is of utmost importance to highlight completion of the project in Mahates,

since this will encourage neighbourhood towns to quickly copy the project. But to do so, we need to demonstrate its value.

Impact in the community

The main aim of this project is to demonstrate that FIRE, working together with the community, can make it possible to eradicate cysticercosis, the first cause of epilepsy in the Caribbean zone in Colombia, and so improve quality of life. But we also must encourage neighbouring countries to do the same.

Economically, the gain is enormous. We calculate that the incidence of neurocysticercosis in Colombia is about 8,928 new cases annually and that 35% of those infected develop epilepsy. The financial budget for these 3,125 people will cost approximately USD 3.125 million annually (excluding indirect costs and prescribing only first generation AEDs).*

**We have not got reliable statistics.*

Conclusions

1. One of the most important causes of epilepsy in Colombia is neurocysticercosis (NCC), especially in the Caribbean and Pacific coasts.
2. 35% of patients suffering NCC endure epilepsy and many of them cognitive disturbances that need rehabilitation.
3. Of course, they will be patients needing special education.
4. The life cost and catastrophic sequels are an enormous burden for the government, families and society in general.
5. Rehabilitation for cognitive sequelae of NCC is also a hard task for a developing country.
6. Our Project is feasible and necessary as we have already completed 50%; we need 50% for finishing it.

81 Projects in 38 countries around the world

ARGENTINA
BANGLADESH
BRAZIL
BULGARIA
CAMEROON
CHILE
CHINA
COLOMBIA
CZECH REPUBLIC
ECUADOR

GAMBIA
GEORGIA
GUATEMALA
HAITI
INDIA
INDONESIA
KENYA
LAOS
LEBANON
LITHUANIA

MAURITIUS
MALAYSIA
MONGOLIA
NAMIBIA
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