DETECTION OF FASCIOLA HEPATICA INFECTION IN A COMMUNITY LOCATED IN THE ECUADORIAN ANDES

GABRIEL TRUEBA, TERESA GUERRERO, MARCO FORNASINI, ISABEL CASARIEGO, SONIA ZAPATA, SONIA ONTANEDA, AND LUIS VASCO
Colegio de Ciencias de la Salud, Universidad San Francisco de Quito, Quito, Ecuador; Facultad de Medicina Veterinaria y Zootecnia, Universidad Central del Ecuador, Quito, Ecuador

Abstract. The presence of fascioliasis was assessed in four Andean communities using an enzyme-linked immunosorbsent assay (ELISA) test to measure antibodies against Fasciola hepatica excretion-secretion antigens. Six percent (9 out of 150) of the individuals in one community were ELISA-positive for these antibodies. Fecal samples from two of the ELISA-positive individuals contained F. hepatica ova. All of the ELISA-positive cases, except for one, were children within the ages of 9 to 12 years.

An IgG enzyme-linked immunosorbsent assay (ELISA) test using excretion-secretion (ES) antigens was developed and utilized to conduct a serological survey on people living in four highland Ecuadorian communities. The locations studied were selected based on the possible presence of animal fascioliasis in 20 sheep fecal samples and the investigation of the presence of Fasciola hepatica ova by a sedimentation procedure. All animal fecal samples from the community of Cuturivi Grande (located 3,000 meters above sea level in Cotopaxi Province) contained F. hepatica ova. Analysis of fecal material from animals in three other communities (located 2,800 to 3,200 m above sea level in Pichincha Province) indicated that 40 to 60 percent of the animals were shedding F. hepatica ova.

Once we obtained written consent from the people in the communities and the approval from Universidad San Francisco de Quito Bioethics Committee, we proceeded to obtain blood samples. Nine serum samples (6%), out of 150 analyzed from Cuturivi Grande were ELISA-positive for antibodies against Fasciola hepatica excretion-secretion antigens. Stool samples from 4 of the ELISA-positive cases were analyzed by the formalin-ether procedure; F. hepatica ova were present in two of them. Fecal samples from 24 ELISA-negative individuals were also analyzed and all were negative for ova. All of the ELISA-positive cases were children between the ages of 9 and 12, except for one sample obtained from a 41-year-old woman. Most of the ELISA-positive patients (80%) complained of abdominal pain, but so did 73% of the total number of people interviewed. The ELISA-positive cases did not show any other symptoms nor did they show significant difference in eosinophil counts when compared with the results of those who were ELISA-negative. Also, it was not possible to correlate ELISA-positive cases with consumption of watercress, although most patients claimed to have eaten other raw vegetables. None of the 250 serum samples obtained from people living in the communities in Pichincha province was positive for the ELISA test. All the ELISA-positive patients were treated with single dose (10 mg/kg body weight) of triclabendazole (Egaten, Novartis Pharma AG, Basle, Switzerland).

To our knowledge, this is the first report of the presence of human fascioliasis in an Ecuadorian community. The age distribution of the serologically positive cases may indicate an occupational association with the infection. Children of the ages of 9 through 12 may come in contact with Fasciola hepatica metacercaria by drinking contaminated water or eating vegetables growing near ditches because they are responsible for taking herds of sheep to grazing fields. Absence of F. hepatica ova in the ELISA-positive cases may be due to the low sensitivity of the parasitological exams or to the presence of a cross-reactive antibody to other trematode infections, such as schistosomiasis. The latter possibility is unlikely since schistosomiasis has not been reported in Ecuador and the altitude of these communities is incompatible with the life cycles of most trematodes. The majority of the fecal samples from both ELISA-positive and ELISA-negative individuals contained nematode ova which may explain the high prevalence of abdominal pain.

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Authors’ addresses: Gabriel Trueba, Teresa Guerrero, Marco Fornasini, Isabel Casariego, Sonia Zapata, Sonia Ontaneda, and Luis Vasco, Universidad San Francisco de Quito, Via Interoceánica, Círculo Cumbayá, Casilla postal 841, Quito-Ecuador. E-mail: Gabriel@mail.usfq.edu.ec Fax: 593 2 890 070 Telephone: 593 2 895 723.

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