

A serological study of human toxocariasis in north India

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ABSTRACT

Background. Human toxocariasis owing to lodgement of the larvae of Toxocara canis in different organs can result in serious clinical syndromes such as visceral larva migrans or ocular larva migrans. Detection of an antibody response to Toxocara canis excretory-secretory (TES) antigen in serum samples is sensitive and specific for diagnosis and epidemiological studies. To assess the extent of this problem in northern India, we tested the antibody response to the TES antigen by ELISA technique in subjects residing in a rural area near Chandigarh and in patients attending Nehru hospital, Chandigarh and clinically suspected to have toxocariasis.

Methods. Serum samples were collected from 94 randomly selected subjects, residents of Kheri village, Ambala district, Haryana; 30 patients clinically suspected to have toxocariasis attending Nehru hospital, Chandigarh; 25 control patients and 15 normal healthy individuals. These were subjected to ELISA technique for detection of an antibody response to TES antigen using a commercial kit (LMD Laboratories Inc. Ca. USA). All the samples were tested in duplicate and positive samples were tested by a different kit (Melotec Biotechnology, Spain).

Results. Of the 94 subjects residing in Kheri village and 30 clinically suspected toxocariasis patients, 6 (6.4%) and 7 (23.3%), respectively, were seropositive for anti-Toxocara antibody response. A history of pica and/or contact with puppies could not be obtained from all the subjects/patients, hence the exact mode of transmission could not be ascertained. However, 3 (3.2%), 2 (2.1%) and 1 (1.06%) seropositive subjects in Kheri village were in the age groups of 1–10, 11–20 and 21–30 years, respectively, while 4 (13.33%) and 3 (10%) seropositive patients who attended Nehru hospital, Chandigarh were in the age groups of 1–10 and 21–30 years, respectively. None of the control patients/healthy individuals were seropositive.

Conclusion. A positive antibody response to TES antigen in 6.4% subjects residing in a rural area near Chandigarh and in 23.3% of patients clinically suspected to have toxocariasis indicates that human toxocariasis may be endemic in certain regions of northern India. A detailed epidemiological study is needed to determine the extent of this problem.


INTRODUCTION

Human toxocariasis, an infestation due to the larval nematode Toxocara canis, is common in both developing and industrialized countries. The human infection occurs due to accidental ingestion of embryonated eggs containing second-stage larvae. It is believed that the parasite is not able to complete its lifecycle in humans. However, migrating larvae can result in serious clinical manifestations such as visceral larva migrans (VLM) or ocular larva migrans (OLM). The seroprevalence in adult subjects varies between 1.4% and 3% in Central Europe but may be much higher in young children in developed and developing countries. In India, case reports, prevalence of Toxocara species eggs in stray dogs, pet dogs and at public places indicate that this may be an important health problem.

The clinical manifestations in VLM and OLM mimic many clinical syndromes and as the parasite does not complete its lifecycle in humans, stool examination is not helpful in its diagnosis or for epidemiological surveys. A biopsy of the affected tissue provides a definitive diagnosis, but is rarely available. Moreover, multiple sections and considerable expertise is required to make the diagnosis. Consequently, the extent to which toxocariasis is prevalent in the population can be assessed by immunodiagnostic techniques. An antibody response to T. canis excretory–secretory (TES) antigens by enzyme-linked immunosorbent assay (ELISA) has been found to be sensitive and specific for the diagnosis of human toxocariasis.

We aimed to assess the antibody response to TES antigen by ELISA in people residing in and around Chandigarh and in patients clinically suspected to have toxocariasis to determine the extent of the problem.

SUBJECTS AND METHODS

Subjects and samples

The Department of Community Medicine, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh organizes an ambulatory care clinic every week at Kheri village, Raipur Rani Block, Ambala district, Haryana. Ninety-four subjects residing in Kheri village (rural area) and attending this clinic with a history of febrile illness, gastroenteritis, respiratory symptoms, dermatological and other infectious diseases were selected by random sampling for inclusion in the study which was done from 1996 to 1999. The sample size was calculated assuming a seroprevalence of 15%, a desired precision of 10% at a 5% risk with a design effect of 2. The estimated sample size was 98. We obtained consent from 94 subjects for this study. A detailed history and clinical examination was recorded on a proforma at the time of sample collection.

Serum samples of 30 patients attending the outpatient departments of PGIMER, Chandigarh and clinically suspected to have toxocariasis (OLM: n=26; VLM: n=4) were also studied. Serum samples collected from patients suffering from neurocysticercosis (5), hydatidosis (5), amoebiasis (5), toxoplasmosis (5), malaria (5) and normal healthy individuals (15) were taken as control samples. Five ml of blood was collected from each subject and the serum stored at −20°C till further analysis.
Antibody response

A specific antibody response to TES antigen was tested by ELISA in all the serum samples, using a commercial kit (LMD Laboratories, USA). All the samples were tested in duplicate. Each sample was diluted 1:100, as per the manufacturer's instructions and the optical density (OD) was recorded using an ELISA reader (Dynatech Labs) at 450 nm. A mean OD of the two values was obtained. If this was more than the OD of a weak positive control sample provided with the kit, it was recorded as positive. The samples found positive were analysed again using a different kit (Melotec, Biotechnology, Spain) to confirm the positive reports.

Stool examination

Stool samples were collected from seropositive subjects in Kheri village to detect the presence of intestinal protozoal and/or helminthic infestations. Samples were analysed by direct wet smear, iodine preparation and concentration techniques.

RESULTS

Of the 94 residents (age range: 1–50 years) of Kheri village, 39 (41.5%) were men and 55 (58.5%) women. Twenty-five (26.6%) gave a history of contact with dogs (pet or stray) and only 14 (14.7%) gave a history of pica during their early childhood. Six (6.4%; 3 men and 3 women) had a positive antibody response to TES antigen by both the kits. Of the 6 seropositive subjects 3, 2 and 1 were in the age groups of 1–10 years, 11–20 years and 21–30 years, respectively. None of the subjects above 30 years was seropositive. Stool samples of 2 of the 6 seropositive subjects were positive, harbouring *Giardia intestinalis* (1) and *Ascaris lumbricoides* (1).

Of the 30 clinically suspected patients with toxocariasis, 21 (70%) and 9 (30%) were men and women, respectively. Seven (23.3%) were seropositive. Four (13.3%) and 3 (10%) of these were in the age groups of 1–10 and 21–30 years, respectively. Only 2 (6.66%) of the 7 seropositive patients gave a history of contact with dogs (Table I). All the control serum samples were negative for an antibody response.

<table>
<thead>
<tr>
<th>Clinical symptoms</th>
<th>Community group (n=94)</th>
<th>Clinical group (n=30)</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>Seropositive (n=6*)</td>
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<tr>
<td>Dog contact</td>
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<tr>
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<td>1</td>
</tr>
<tr>
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</table>

REFERENCES


HIV/AIDS TRAINING COURSE FOR HOSPITAL-BASED PHYSICIANS
Christian Medical College and Hospital, Vellore

Physician training is needed to address clinical care needs in the context of the emerging HIV epidemic. Current training does not address secondary hospital physicians in the voluntary sector who are important providers of HIV care. Christian Medical College and Hospital is starting a one-year course in HIV care for hospital-based physicians working in the voluntary sector to address this need.

A. Purpose: (i) To enable physicians to improve their knowledge and skills in HIV care; (ii) enable the development of accessible and quality HIV clinical services in the hospitals where these physicians are working.

B. Eligibility for course: (i) MBBS qualification; (ii) employed in a secondary hospital (small or medium size hospital or clinic) in the voluntary sector; (iii) involved in HIV care activities of the hospital; (iv) working in Tamil Nadu, Kerala, Andhra Pradesh or Karnataka; (v) commitment to develop and implement a clinical care project in their hospital; and (vi) administrative support from the hospital for undertaking the course and implementing the project.

C. Participants: A total of 25 participating doctors and hospitals will be selected for the program.

D. Training course:

Three contact courses at CMCH (total duration 1 month); Distance learning course (4 months) and Project implementation (6 months).

During the contact courses the participants will be oriented to distance learning, learn project management skills and develop their project. They will gain practical exposure to in-patient, out-patient and emergency care of HIV infection; setting up an HIV clinic, counselling and patient education services, infection control and exposure reporting system, basic laboratory facilities and blood banking.

The distance learning course consists of 16 modules. The materials include: textbooks, distance learning materials, projects, exercises and self-assessments. During the distance learning course, the faculty will maintain continuous contact with the course participants through e-mail.

During the project phase the participants will implement a clinical care project consisting of the setting-up of an HIV team, a clinical care set-up for in-patient, out-patient and emergency care, counseling services and an infection control system. The project may also include development of a hospital HIV policy, staff, general practitioner and patient education, adequate laboratory facilities and networking with community organizations and positive people's groups involved in HIV care and prevention.

E. Outcomes: At the end of the course the hospitals would have a running HIV clinical care program with trained doctors.

F. Course faculty: Twelve course faculty from CMCH, Vellore (Medicine, Surgery, O&G, Paediatrics, Community Medicine, Psychiatry, Clinical Virology, Microbiology, Clinical Pathology, Counselling and Social Work) and external experts.

G. Dates: Applications are due by August 15, 2002 and course to start on December 1, 2002.

H. Course fees: There are no course fees. Accommodation at CMCH will be provided at nominal rates. The program provides financial support to help participating hospitals set up clinical care services.

I. For course prospectus and application forms to write to: Anand Zachariah, Course Organizer, HIV/AIDS Training Program for Hospital-Based Physicians, Associate Professor, Medicine Unit 1 and Infectious Disease, Christian Medical College and Hospital, Vellore 632004.

Ph. (0416) 222102, Ext. 2730/2748; e-mail: zachariah@cmcvellore.ac.in; Fax- (0416) 232035, 232103

(The program is being undertaken in collaboration with Population Councils as part of the HIV/STI Prevention and Care Research Program, India.)