Communicable Diseases

Toxocariasis in the British Isles 1982-3

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Toxocara canis is a cosmopolitan roundworm estimated to affect 12% of dogs in Britain.¹ Transmission to man occurs by the ingestion of eggs in soil or from contaminated hands. Over 2% of the general population of Britain have been infected with toxocara,^{2,3} though most such infections are asymptomatic or unrecognised.

The clinical picture in man varies with the number of larvae ingested, the frequency of reinfection, the intensity of the immune response, and other factors.⁴ The two most common syndromes in man are visceral larva migrans and ocular toxocariasis. The former presents typically in a young child with a history of pica; cough, malaise, and irritability are common features, while eosinophilia (which may persist for months) is a useful laboratory finding. Ocular toxocariasis, usually unilateral, presents in older children or adults. The clinical picture varies from a solitary retinal granuloma to severe endophthalmitis.⁴

The Toxocara Reference Laboratory at the Hospital for Tropical Diseases provides a service for the serological diagnosis of human toxocariasis. The indirect fluorescent antibody test⁵ has been superseded by an enzyme linked immunosorbent assay (ELISA) test³ using secretory/excretory products of cultured second stage larvae of *T. canis* as antigen.⁶ This test is both sensitive and specific.³ On the basis of epidemiological findings in healthy controls and in children with visceral larva migrans the ELISA results are grouped into three ranges: values equal to or less than 0.50 are reported as negative; values of 0.51 to 1.5 are indicative of either past infection or current light infection; and values greater than 1.5 are strong positive reactions.³ The ELISA test has now been in routine use for over a year, and we have therefore surveyed the results of the first year's work.

Results

During the year May 1982 to May 1983, 1708 requests for serology were received at the reference laboratory. Of these 118 were from outside the British Isles and are excluded from further analysis. Insufficient information on sex, age, or clinical details was given for 187 individuals who were also excluded from the detailed analysis but included in the total results.

No important differences were found at any age between the sexes, which were therefore grouped together; nor were there important differences in the results from Scotland, Ireland (North and South), and England and Wales; the results therefore refer to the British Isles. The population was grouped by age into those over 14 years of age and those of 14 years or less.

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A positive result (ELISA >0.5) was found significantly more frequently in children (153 positive results out of 570 tests) than in adults (118 positive results out of 835 tests, $\chi^2 = 34.89$, $p < 0.0001$). A strong positive result (ELISA >1.5) was found significantly more often in children (63 out of 570 tests) than in adults (10 out of 833 tests, $\chi^2 = 66.60$, $p < 0.0001$).

The clinical details given on the request forms allowed the reasons for requesting toxocara serology to be divided into three groups: those with possible visceral larva migrans (and most commonly eosinophilia); those with possible ocular toxocariasis (and particularly endophthalmitis); and those with other morbid conditions, some of which may have been compatible with visceral larva migrans—for example, hepatic granulomas not otherwise specified. The results of the serological investigations grouped clinically and by age are shown in the table. The number of children with positive results and either eosinophilia or endophthalmitis were significantly greater than those with positive results and "other morbid conditions," ($p < 0.01$ with

Results of ELISA test in different groups (aged under and over 14 years). Results are numbers of patients

ELISA result	Patients with					
	Eosinophilia		Endophthalmitis		Other morbid conditions	
	< 14	≥ 14	< 14	≥ 14	< 14	≥ 14
0-0.5	81	117	93	302	243	296
0.51-1.5	18	15	28	50	44	43
> 1.5	27	5	21	3	15	2

both conditions); but this difference was due only to the numbers of children with eosinophilia or endophthalmitis and strong positive results. The numbers of patients with endophthalmitis of toxocaral origin has varied only slightly between 1977 and 1981.

The numbers of patients with positive ELISA tests who should be diagnosed as having ocular toxocariasis lies somewhere between 24 and 102; the larger figure must include some with endophthalmitis from other causes in the presence of a previously positive toxocaral infection and others with an endophthalmitis caused by a current light infection. It is not possible to decide which of these two alternatives is the more likely.

Discussion

Toxocariasis continues to be an important infection in the British Isles, particularly as the greatest burden of disease falls on children. Clearly toxocariasis must be considered in the investigation of a child with eosinophilia or endophthalmitis.

The ELISA test quantifies the serological response, and this may lead to difficulty in interpretation. Intermediate values (0.51-1.5) may indicate past infection, and any coexisting disease may be wrongly attributed to toxocariasis. It has been

suggested that antibodies to secretory-excretory antigens are more likely to be related to active migration and infection than are antibodies evoked by somatic antigens—for example, in the indirect fluorescent antibody test⁷—and may therefore indicate a truer causal relation. De Savigny and Tizard found, however, in studies on animals that antibody to secretory-excretory antigens persisted for a long time,⁶ and other workers have drawn similar but indirect conclusions about persistence of antibody in man.³ Clearly further work is required on the serological features of toxocariasis, and this is being undertaken in this department and elsewhere. We hope that doctors in the British Isles will continue to send specimens of serum for toxocara serology from appropriate patients providing as much clinical information as possible for further analysis.

References

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Influenza surveillance: November 1982-June 1983

As in the previous four winters the prevalence of influenza remained low throughout the 1982-3 season. Most of the indices used in surveillance suggested that influenza was most active from early January to early March. For the first 10 weeks of 1983 clinical influenza was reported to the Royal College of General Practitioners at rates which were about twice the seasonal average for non-epidemic years; unlike the previous winter's influenza there was no definite peak. By the end of the winter 0.5% of the practice populations had consulted with influenza, compared with 1.1% in the previous winter (1981-2), when much of the illness was caused by influenza B virus. Outbreaks were reported in boarding schools, hospitals, and residential units for the elderly.

Influenza A viruses were identified from October 1982 to June 1983, and from the second week in January 1983 to the last week in March the numbers of reports exceeded 100 per week, with a peak of 229 in the 10th week of the year, the highest since 1977-8. Eighty per cent of the identifications were of subtype H₃N₂, and the predominance of this subtype was reflected in the wide age distribution of patients with influenza A infections (see figure). H₁N₁ infections tend mostly to attack those below about 25 years of age. Only a few influenza B viruses were identified.

Data for respiratory deaths (see figure) and for deaths from all causes were consistent with the other indices, showing that influenza activity was only fairly low in 1982-3. Mortality started to rise at the end of December, returned to the seasonal average early in March, and remained below average for the rest of the surveillance period. A retrospective estimate of 2000 "excess deaths" was made for the winter period, compared with 3000 in 1981-2 and 17 000 in 1975-6, the last major epidemic winter.

Scotland and abroad

In Scotland the indices for influenza were similar to those of England and Wales, with the largest weekly number of laboratory reports in March; influenza A virus subtype H₃N₂ was predominant.

Influenza A activity was noted in early December in parts of West Germany and Canada. By mid-January sporadic cases and localised outbreaks had also been reported from many European countries. In the United States, though there was widespread activity in several states, overall only a low to moderate peak incidence was reached, with maximum activity generally in February or March; as in Britain, subtype H₃N₂ predominated. Throughout the 1982-3 season in the northern

hemisphere the most common strains were intermediate cross reacting viruses closely related to A/Bangkok/1/79 and A/Texas/1/77, but some reacted poorly with antisera to these two variants and resembled A/Philippines/2/82. Thus there was some evidence of antigenic drift. Influenza A H₁N₁ and influenza B were much less frequently reported.

Influenza in the last five winters.