Intestinal Parasites in Laotian Refugees

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Laotian refugees relocated in the Columbus, Ohio, area were screened for intestinal parasites. Eight different pathogens were isolated. The prevalence of the various organisms ranged from 4 to 61 percent of persons affected and 18 to 100 percent of families. These data show a higher prevalence of parasitic disease than that revealed by previous observations by the Center for Disease Control among Southeast Asian refugees. It was also apparent that neither federal nor local programs were adequate to meet the special health care needs of these refugees nor to safeguard the health of communities they entered.

In the summer and early autumn of 1976, people evacuated from Laos after its fall to the Communists began to be seen in the Family Practice Center of the Grant Family Practice Residency in Columbus, Ohio. Soon a difference appeared between them and the relatively healthy Thai and Vietnamese patients evacuated earlier. The Laotians, particularly the children, were repeatedly presenting with "bronchitis," gastrointestinal complaints, and poor growth.

A retrospective study of the charts of all the Southeast Asian patients was therefore undertaken. Twenty-seven charts, representing 78 office visits, were reviewed. It was interesting to note that in many cases the possibility of parasitic disease was not entertained although it might well have explained the symptoms and findings (particularly eosinophilia). In 11 cases, however, stools were sent to the hospital laboratory for ova and parasite examination. Of the people thus screened, 66 percent were found to have at least one parasite while half harbored two or more. Organisms so identified are listed in Table 1. The problem seemed limited to the Laotians; no Vietnamese or Thais were found infested. Therefore, a more definitive investigation was undertaken of the Columbus Laotian refugee community.

About 100 Laotians in 14 families were initially relocated in Columbus in 1976. Unlike their westernized, usually bilingual, urban Vietnamese counterparts, these people were rural farmers, only one of whom spoke English, and were sorely ignorant of modern sanitation, refrigeration, plumbing, and medical care. Providing no background information on their former habitat, health problems, or special needs, the State Department left the task of assimilation of these refugees to charitable religious agencies with scant resources. Working with these agencies and with the refugees themselves, a mechanism was eventually developed to screen all the Laotians for intestinal parasites.

Methods

Stool specimen vials containing ten percent formalin preservative, three per person, were distributed to each Laotian family. The need for, and the procedure of, proper collection were carefully explained and generally well heeded. Specimens thus obtained were collected and taken to the Ohio Health Department Laboratory and examined. Stools were prepared as (1) a direct wet-mount

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Table 1. Parasites Found by Initial Episodic Screening

Protozoa
Giardia lamblia*
Entamoeba coli
Entamoeba hartmanni
Endolimax nana
Helminths
Trichuris trichiura*
Necator americanus (hookworm)*
Ascaris lumbricaides*
"possible liver fluke"*
*Organisms considered pathogenic

slide of a sample resuspended in 0.85 percent saline; (2) a direct wet-mount using Lugol iodine as a stain; and (3) a formalin/ether concentration of a sample filtered through gauze and resuspended in Lugol iodine. All slides were then examined microscopically for parasite eggs and organisms.

Results

Of the 82 people in 13 families who remained in Columbus throughout the study, 70 persons in 11 families returned a total of 207 stool specimens for analysis. Their ages ranged from one month to 75 years, and the sexes were equally represented. Table 2 shows the prevalence of organisms found, as well as instances in which routine hospital laboratory screening failed to demonstrate parasites subsequently discovered.

These figures show that Trichuris and Entamoeba histolytica were missed entirely on the initial examinations. While all families had members with Necator americanus (hookworm), Clonorchis was found only in the one family from the Laotian lowlands, where fresh fish is plentiful. Pathogens were not isolated in children less than one year of age, but one four-month-old infant harbored nonpathogenic amoeba. At above one year of age, no relationship was apparent between the age or sex of those infested and the type of organism found. The variety of parasites demonstrated among different members of each family, the potential for person-to-person transmission, and the fallibility of even the most careful examination suggested the probability that most members of a given family shared a common pattern of disease although some organisms may have been missed in some persons.

The large number of parasites missed by the hospital laboratory can be explained in that the routine there was to collect stool samples unpreserved in waxed cardboard containers. Although such a method was reliable for specimens carried still warm directly from ward to laboratory, the stools so collected on an outpatient basis were often frozen, refrigerated, or let stand open for several days before they were returned for examination. Such specimens were useless for the reliable identification of parasites. Collecting stools in formalin, in the manner described, preserved samples indefinitely in a usable form.

Treatment

Once stool screening was completed, refugees were treated as family units for all pathogens isolated among them. Treatment was based upon the recommendations of the *Medical Letter* dealing with parasitic disease.[1] In most cases all organisms present could be treated with mebendazole and metronidazole. Other agents were added as appropriate. In an attempt to protect treated

Table 2. Prevalence of Intestinal Parasites in Laotian Refugees

Organism	% of People Infested N=70	% of Families Infested N=11	False Negative Stools/ Positive**	Now Positive Previously Negative†
Entamoeba coli	31	73	6/63	5/15
Entamoeba hartmanni	1	9	2/3	1/21
*Entamoeba histolytica	10	36	8/16	6/22
*Giardia lamblia	20	54	5/38	0/14
Iodamoeba buetschlii	3	18	3/5	0/22
Endolimax nana	17	54	11/33	1/22
Chilomastix mesnili	1	9	0/3	1/22
*Necator americanus (hookworm)	61	100	8/126	2/11
*Ascaris lumbricoides	11	45	5/24	2/20
*Strongyloides stercoralis	4	18	2/9	2/22
*Trichuris trichiura	16	73	4/31	4/22
Enterobius vermicularis	3	18	5/7	0/22
*Hymenolepis nana	4	18	0/9	1/22
*Clonorchis sinensis	10	9	6/21	0/22
Total % with Pathogenic Infestations	77	100	—	—

*Organisms considered pathogenic
**False negative stools were specimens in which no parasites were found; but in these individuals parasites were identified in other specimens
†Previously negative refers to results of initial episodic screening

individuals from untreated carriers, prescriptions for all 11 families were distributed simultaneously. Unfortunately, this distribution was on the day the sponsoring agencies lost their federal funding so no meaningful follow-up has been possible.

Discussion

Laotians fleeing Communist rule were evacuated first to Bangkok, Thailand. Thence, presumably (no official reports have been provided) they followed the path of Vietnamese refugees via the Philippines, Guam, and Hawaii to Los Angeles and San Francisco before final relocation in cities such as Columbus.[2-5] (See also: Department of Immigration and Refugee Service of the Lutheran Council in the United States of America: Lao Refugees: Memoranda 1 and 2, 1975.) The poverty of conditions which they faced during this odyssey has been poignantly described elsewhere.[5]

Attempts were made to screen Vietnamese refugees for tuberculosis, venereal disease, and other diseases, the most common findings being measles and intestinal parasites.[2-5] Also, these refugees were given initial vaccinations against tetanus and childhood illnesses.[5,6] (See also: Department of Immigration and Refugee Service of the Lutheran Council in the United States of America: Lao Refugees: Memoranda 1 and 2, 1975.) On the other hand, the only medical attention the Laotians

enjoyed was a chest x-ray, with no reports of the findings, and smallpox and cholera vaccinations, all performed in Bangkok.

When they were first entering this country, 1,000 Vietnamese were screened by the US Center for Disease Control (CDC) for parasitic disease. The CDC found that the prevalence of parasites among these refugees was not significantly different from that in the US population at large. Also, the attitude was taken that there was no risk of direct person-to-person transmission of the helminthic organisms. For these reasons the CDC recommended no further large-scale screening nor treatment of any Southeast Asian refugees for parasites.[7,8]

Data collected on Laotians in Columbus, however, differ greatly from data gathered on the Vietnamese by the CDC. In the United States, for instance, prevalence rates were five percent for E histolytica and 1.5 to 1.9 percent for Giardia. Prevalence of the same organisms among the Laotians was 10 percent and 20 percent, respectively. Although the CDC study listed no US prevalence rates for the helminths, comparison of the figures for Vietnamese refugees to those for the Laotians again shows a much higher rate of infestation among the latter for every pathogen except Ascaris.[7,8]

Children studied who were less than one year of age were born after the Laotians' arrival in the United States, and the absence of pathogens in them may probably be ascribed to their lack of exposure to an environment teeming with endemic parasites. Contrary to the CDC view, however, there is considerable evidence that many of these pathogens can be transmitted directly person-to-person as well as by various vectors such as flies and cockroaches.[9,10] There is even one reported case of infective Strongyloides larvae being found in human milk.[11] The finding of (nonpathogenic) amoebae in a four-month-old, American-born refugee infant supports the probability of some person-to-person passage among the Laotians. Also, while any of those organisms listed as "pathogenic" can cause abdominal pain, diarrhea, anemia, and other maladies, some, particularly E histolytica, Giardia, and Strongyloides, can produce serious morbidity or death even years after the patient's removal from the endemic area.[9,10] It was for these reasons that the decision was made to treat the refugees as outlined.

Conclusion

The discovery of a high prevalence of numerous intestinal parasites in Laotian refugees has demonstrated a failure of the evacuation program to adequately care for the health of the refugees or to protect the health of communities where they were relocated. The efforts of this study have also highlighted the inadequacy of community resources to cope with such problems. It is hoped that there may be more efficient cooperation between federal and local organizations dealing with any future large refugee evacuations. Meanwhile, those involved with the care of Laotian or other refugees must take care to consider the special health problems which their backgrounds may produce.

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