Communications

Identification of Intestinal Nematodes Using the Digital Rectal Examination

Jerry E. Jones, MD
Iowa City, Iowa

Laboratory procedures for identifying intestinal nematodes have existed for many years. Laboratory manuals state that three stool examinations collected over a three- to five-day period will identify the presence or absence of intestinal parasites in approximately 95 percent of the cases.[1] However, these accepted laboratory procedures are circumscribed by a complex process. This process begins with the physician's awareness of parasitic diseases, ie, "index of suspicion." This is followed by the patient's reactions and compliance to the collection of fecal specimens over a three- to five-day period, each specimen to be collected on three separate occasions. Then, there is transport of the specimens to the laboratory. Once in the laboratory, a technician, interested or uninterested, performs gross and microscopic parasitologic examinations with or without appropriate concentration or staining techniques. Then, the report returns to the physician, who must interpret the findings, or lack of findings, and provide the follow-up care and/or treatment. This process is made even more complicated in the ambulatory care setting, where collection methods often vary. Also, many primary care physicians do not keep stool collection kits readily available in the office. Moreover, patients may be embarrassed, confused about how to collect specimens, and may find it difficult to collect fecal specimens over a five-day period. The collection of stool specimens may be especially difficult among the adolescent and pediatric age groups. This is significant because it is this age range that has the highest risk of harboring intestinal parasites.[2-5] These factors lead to poor patient cooperation, increased physician frustration, and decreased diagnosis of intestinal parasites. This may also result in a tendency for the physician to treat patients without a specific species diagnosis, thus avoiding the collection of fecal specimens.

Darby and Westphal[6] suggested using the digital rectal examination as a diagnostic tool in partial small bowel obstruction secondary to Ascaris lumbricoides. This idea was expanded in this study to involve the ambulatory setting. This communication reports the results of a study that used the digital rectal examination as a procedure in identifying intestinal nematodes.

Methods

A six-county area in eastern Kentucky was selected for the geographic location of this study. The counties involved were Wolfe, Lee, Owsley, Knott, Perry, and Letcher. This area had been rated previously for its endemic nematode population.[2,7] The counties belong to the Kentucky River District regional health department under the direction of a single public health office and administrator.

Permission was obtained from the director of the six county health departments for the author to serve as a physician doing Title XIX screening physical examinations during a three-week period

From the Department of Community Medicine, University of Kentucky College of Medicine, Lexington, Kentucky. Requests for reprints should be addressed to Dr. Jerry E. Jones, Department of Family Practice, University of Iowa College of Medicine, Iowa City, IA 52242.

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Table 1. Identification of Intestinal Nematodes (Frequency of Positive Examinations by Age Groups)

Age Group (years)	No.	Cases	Percent Positive
1-5	31	10	32.4
6-12	25	8	32.0
13-14	10	2	20.0
15-18	13	2	15.6
Total	79	22	100%

in October 1975. During this time period, a general physical examination was performed on 79 individuals. Ages ranged from 1 to 18 years. As part of the physical examination, a simple digital rectal examination was done. The gloved and lubricated finger was inserted 2 to 5 cm within the anus and rotated gently. The fecal material and/or mucus obtained was placed onto a microscope slide with a wood applicator stick. The slide had been prepared with two drops of normal saline. A cover slip was applied, and the slide was examined microscopically for the presence or absence of the following intestinal nemotodes: (1) Ascaris lumbricoides, (2) Trichuris trichuria, (3) Enterobius vermicularis, (4) hookworm species, and (5) Strongyloides stercoralis. The results were recorded by age, sex, and reported symptoms.

Results

The study population consisted of 79 individuals, 38 males and 41 females. When the medical history was recorded, all individuals denied any gastrointestinal symptoms or complaints. Ten individuals reported passing "roundworms" previously. The mean age was 9.1 years, with a standard deviation of 4.97 years. The mode was 3 years. The median age was 7 years.

Table 1 shows the frequency of positive stools by age grouping. Preschool (1 to 5 years) consisted of 31 individuals. Among this group, 10 cases of intestinal nematodes were identified. Likewise, the grade school age group (6 to 12 years) had 25 individuals with 8 cases. This gave an identical frequency of 32 percent for the first two age groups. Junior high (13 to 14 years) and high school (15 to 18 years) had 10 and 13 individuals, respectively. Two cases were identified in each age group, giving a 20 percent positive rate for junior high and a 15 percent positive rate for high school.

All five intestinal nematode species were identified using the digital rectal examination. A total of 22 individuals were found to have 23 intestinal nematodes. One case of double infection was found. Thus 28 percent of those examined by this method were positive for intestinal nematodes. Twelve cases, or 52 percent, of the total nematodes identified were Ascaris lumbricoides. Seven cases, or 30 percent, were Enterobius vermicularis. Two cases of hookworm were found. Single cases of Trichuris trichuria and Strongyloides stercoralis were found.

Comment

The identification of intestinal parasites has remained the domain of the specialist or reference laboratory. However, it is the primary care physician who initially evaluates the patients' concerns and complaints suggesting parasitic disease, but often lacks the desire and/or the simple methods or tools for identifying intestinal parasites. This in itself is enough to discourage interest or motivation in producing a parasitic diagnosis with parasitologic findings. This study found that all intestinal nematodes could be found microscopically by performing a digital rectal examination on a reportedly asymptomatic population. No conclusions

are drawn as to its general applicability, but further studies should be designed to compare its sensitivity and specificity to the established techniques presently being used for parasitic identification. If this technique could compare favorably to the stool collection methods, it would serve as a simple, direct method for the ambulatory care setting. Also, it would be helpful to expand the evaluation of the digital rectal examination to include its ability to identify intestinal protozoa. This method could prove especially helpful in screening programs for Southeast Asian refugees.

References

1. Garcia LS, Ask LR: Diagnostic Parasitology Clinical Laboratory Manual. St. Louis, Mo, CV Mosby Company, 1979
2. Fulmer HS, Huempfner HR: Intestinal helminths in eastern Kentucky: A survey in three rural counties. Am J Trop Med Hyg 14:269, 1965
3. Bluementhal DS: Intestinal nematodes in the United States. N Engl J Med 26:1437, 1977
4. Katz M: Parasitic infections. J Pediatr 87:165, 1975
5. Warren KS: Helminthic disease endemic in the United States. Am J Trop Med Hyg 23:723, 1974
6. Darby CP, Westphal M: The morbidity of human Ascariasis. J South Carolina Med Assoc 68:104, 1972
7. Gloor RF, Breyley ER, Martinez IG: Hookworm infection in a rural Kentucky county. Am J Trop Med Hyg 19: 1007, 1970

Glaucoma Detection in Family Practice Residencies

James B. Tucker, MD
Syracuse, New York

Glaucoma is an insidious disease, the second leading cause of blindness in the United States today.[1] The precise definition of glaucoma is somewhat controversial, particularly in the interrelationship of increased intraocular pressure, cupping of the optic nerve head, and visual field loss. While an exact definition is debated, there remains no disagreement about the devastating potential of the disease. It is currently felt that well over one million Americans have significant visual impairment because of glaucoma. In many instances early detection and appropriate therapy could have prevented or lessened this vision loss.[1,2]

When the National Society to Prevent Blindness sponsored the First National Conference on Glaucoma Detection and Treatment in January 1980, the diagnostic role of the family physician received great attention.[1] Family physicians and other primary care specialists (the general internist and general pediatrician) are the funnel through which the vast majority of Americans enter our health care system. Preventive medicine and the early recognition of disease processes are crucial to these disciplines.

Current detection techniques for glaucoma are imperfect. A major challenge facing the medical community is to determine the most effective means of glaucoma detection and to achieve widespread implementation of this method. Current recommendations include both tonometry and ophthalmoscopy for office evaluation.[1] Particular attention should be given to high risk populations: the elderly, severe myopics, blacks, diabetics, hypertensives, and those with a family history of glaucoma.

A review of the family medicine literature, however, seems quite contrary to the information presented at the First National Conference on Glaucoma Detection and Treatment. With a single exception,[3] preventive medicine/health mainte-

From the Department of Family Practice, Upstate Medical Center, State University of New York, Syracuse, New York. Requests for reprints should be addressed to Dr. James B. Tucker, Department of Family Practice, Upstate Medical Center, 301 Prospect Avenue, Syracuse, NY 13203.

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