reduction technique, it did demonstrate the presence of antibody to poliovirus type 1. The subject involved was 12 years old, had been immunized by the three-dose ACIP schedule, and had received a booster seven years previously. Review of this subject's past medical history did not reveal any apparent immunologic disease.

Comment

It has been shown previously that neutralizing antibody to poliovirus declines over time and can be boosted with an additional dose of OPV.[4] This study, however, demonstrates that adequate immunity was obtained from the present immunization policies for poliomyelitis and persisted at least six to nine years. Another booster at 12 years of age would therefore not offer increased protection at that age.

An additional booster at 12 years of age might, however, prolong the protection that exists at that time. This prolonged protection could eventually reduce the number of adults who because of their own inadequate immunity are at risk for contracting poliomyelitis from immunized infants.[6] It is not known whether lack of immunity in this adult group results from inadequate immunization or declining antibody titers.[7] Repeating this study on the same population in subsequent years may provide useful information in this regard.

Answering these questions about the duration of polio immunity is essential if a safe and effective national polio immunization policy is to be established. If polio immunity does indeed decline over time and additional boosters are needed, perhaps on a regular basis, then a switch to IPV might be indicated for the program as a whole. IPV is a safer vaccine than OPV, its only disadvantage being the need for regular boosters.

Acknowledgments

This study was supported by a grant from Lederle Laboratories. Viromed Laboratories and Dr. Bonnie Bastain provided virologic technology.

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An Extended Family With Giardiasis

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Asymptomatic infants with giardiasis may be the unsuspected cause of treatment failure in other extended-family members. The family physician must maintain a very high index of suspicion for this problem. Giardiasis is often asymptomatic,[1] but little doubt remains that the organism can produce symptoms.[2] Waterborne,[3] foodborne,[4] and person-to-person[5] transmission of Giardia lamblia has been observed. Galazka points out that the family physician must consider the source whenever giardiasis is identified in an individual.[6] This case report describes individuals whose giardiasis was not cured until members of the extended fam-

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ily from different households were treated. G lamblia was recovered from members initially considered unlikely to be infected with the organism.

Case Report

The illustrative extended family (Figure 1) consists of three unmarried sisters, their five children, and another adult occasionally involved in the care of the children. The four adults maintained separate households, but contact among members of the extended family was frequent. They received their water from the municipal waterworks and had no pets. The children were not enrolled in any day-care center. The initial patient was one of the children.

Patient 6, a 3-year-old white boy, presented to the family practice center with a history of poor weight gain over a period of several months, intermittent diarrhea, occasional constipation, anorexia, and abdominal cramps, but no vomiting. The child weighed 25 lb (11.4 kg) and his height was 31 1/2 in (83 cm), both of which were less than the fifth percentile. The remainder of the physical examination was unremarkable. Initial fecal studies revealed only Entamoeba coli cysts.

During the workup of this child the mother, patient 3, likewise presented to the clinic with a history of stomachache, bloating, nausea, and occasional bouts of diarrhea over the previous several weeks. She had recently traveled to Texas. She also admitted to significant recent emotional stress. Her physical examination and initial laboratory studies were unremarkable, and she was treated symptomatically with chlordiazepoxide and clidinium (Librax). After two weeks her symptoms were unchanged, and three stool specimens revealed cysts of E coli only. On the suspicion that G lamblia might also be present, duodenal mucus was sampled with an Entero-Test (HEDECO) capsule. G lamblia trophozoites were identified. Patient 6 (treated empirically) and patient 3 were treated with oral metronidazole for seven days in the usual recommended doses for children and adults. The child's diarrhea improved, and he gained weight. The mother's symptoms abated. However, symptoms returned in both patients after approximately three months.

It was noted that others in the extended family

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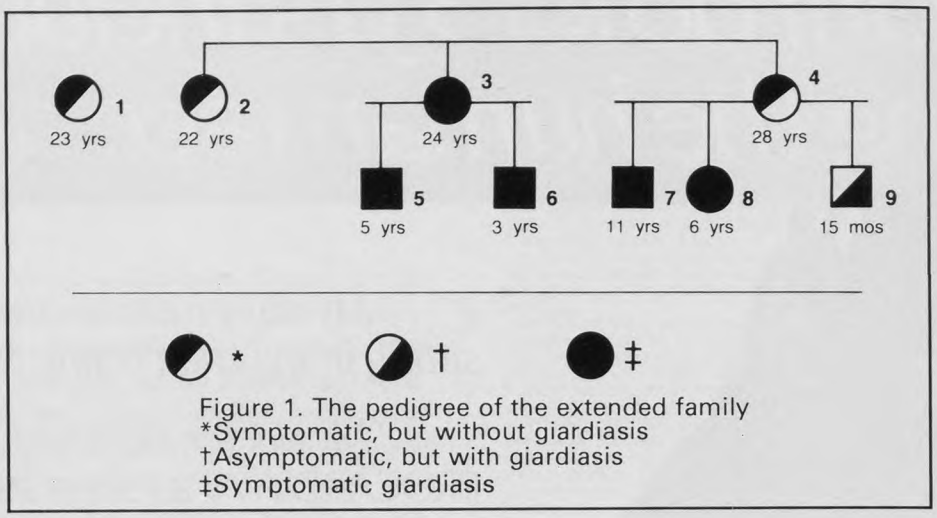

Figure 1. The pedigree of the extended family
*Symptomatic, but without giardiasis
†Asymptomatic, but with giardiasis
‡Symptomatic giardiasis

had gastrointestinal complaints, and because of suspected person-to-person transmission (and reinfection), the entire extended family was studied. At least three stool samples were examined from each of these nine people. Samples were preserved in 10 percent formalin and examined by the Kentucky State Laboratory within 24 hours. If the three specimens were negative, an Entero-Test was performed after informed consent was obtained in accord with the University of Louisville's Human Research Committee. Cysts of G lamblia, but no other protozoa, were identified in the stools of patients 6 and 7. In those people for whom stools were negative for cysts, trophozoites were found in the duodenal mucus of patients 5, 8, and 9. The false-negative rate for the stool samples was 75 percent. Those infected were treated with oral metronidazole in the usual recommended doses and remained asymptomatic for over one year.

Comment

When an individual is found to be infected with G lamblia, the physician should consider the source, even innocent-appearing asymptomatic infants. It is clear from the literature that the physician should consider community epidemics, other members of the household, sexual contacts, and even animal carriers as possible sources of the infection.[6-8] This case illustrates that members of the extended family are another potential source. It is notable that the 15-month-old asymptomatic child with three negative stool samples was found to have trophozoites in his duodenal mucus. A 12-month-old relatively asymptomatic child was implicated as the source of a foodborne community epidemic in 1979.[4] Thus, the physician should consider infants still in diapers as possible sources even if they are asymptomatic and have had multiple stool samples in which cysts of G lamblia could not be identified. The administration of the Entero-Test is not difficult in infants. Examination of duodenal mucus remains as the most exact way of diagnosing the infection[9] until such time as serologic testing, now limited to research,[10] becomes more widely available.

Acknowledgment

The HEDECO Company, Mountain View, California, provided the Entero-Test capsules, and the Kentucky State Laboratory examined study specimens.

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