Cyclosporiasis: another emerging pathogen comes ashore

Cyclosporiasis is caused by human-associated coccidian protozoa of the genus *Cyclospora*. The disease was first described in 1979 in Papua New Guinea[1] and the causative agent identified in 1993.[2] Transmitted to humans via food or water, the illness is characterized by frequent watery stools, flu-like symptoms and other gastrointestinal complaints such as flatulence and burping. Anorexia and weight loss are also common. If untreated, symptoms may last for a few days to a month or longer and may follow a relapsing course.

Before 1996 most recognized cases in North America were associated with travel abroad.[3] However, in the spring of 1996 an outbreak occurred in 20 US states, the District of Columbia, and in Ontario and Quebec.[3] An international investigation implicated imported Guatemalan raspberries as the cause of this outbreak. Another widespread outbreak occurred this year. Since April 1997 the US Centers for Disease Control and Prevention (CDC) and Health Canada have received reports of 20 clusters of cases from 8 states and 1 cluster from Ontario involving approximately 140 laboratory-confirmed cases and 370 clinically defined cases. These clusters were associated with events such as receptions or banquets held between Mar. 19 and May 25. In addition, more than 70 apparently sporadic laboratory-confirmed cases (not associated with specific events) have been reported from 8 US states, Ontario and Quebec.[4]

Eating fresh raspberries appears to have been the cause of the illness in 7 of the 15 events analysed to date and to have been associated with the illness (but not significantly) in an additional 6 events. In 2 events linked to eating in restaurants the illness was associated with mesclun, a mixture of salad greens.[4]

Raspberries implicated in this year's outbreak were again imported from Guatemala. Since May 28, raspberry shipments from Guatemala have been suspended in the US and hence in Canada, as Guatemalan produce is imported via Florida. Because of the short shelf-life of the fruit it is unlikely that any fresh raspberries from Guatemala remain in stores. Washing fresh fruit and lettuce may reduce the likelihood of transmission of the parasite, but it is difficult to thoroughly wash raspberries given their creviced surface and fragility. Commercial freezing and pasteurization inactivate *Cyclospora* oocysts; frozen raspberries are probably safe to eat.[4]

As noted by Osterholm,[5] the globalization of the food supply has meant that we do not have to leave home to suffer gastrointestinal illness caused by an unusual or emerging pathogen. We can experience the charms of traveller's diarrhea simply by visiting the local supermarket or fruit and vegetable stand. It is difficult to control irrigation, fertilization and handling practices of food suppliers located around the world; *Cyclospora* and other emerging parasites will continue to come ashore. Using ionizing radiation for food pasteurization would dramatically reduce the risk of illness resulting from bacterial and parasitic contamination of the food supply.

Until such practices are adopted by the food industry physicians will have to be alert to this new parasite. Patients with protracted diarrhea and gastrointestinal symptoms or with remitting and relapsing gastrointestinal symptoms, fatigue and weight loss should be investigated for this organism. Because laboratories may not routinely look for *Cyclospora* in stool samples submitted for "ova and parasite" examination, physicians should specify their clinical suspicion on the test requisition form. In most cases the illness responds well to trimethoprim–sulfamethoxazole twice daily for 7 days.[5]

Further information for health care providers and patients is available on the CDC Web site at **www.cdc.gov/ncidod/diseases/cyclospo/cyclomen.htm**

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