Ascariasis: common human intestinal roundworm

Ascariasis is a common intestinal roundworm found in man all over the world. A World Health Organization report (1979) estimates its prevalence in about a quarter of the global population (i.e., less than 900 million human cases). Such a high prevalence is probably because of the high fertility of the female worm which lays nearly 240,000 eggs a day over its life span of about one year. These eggs are evacuated in the host’s faeces and deposited in the soil; and also because of the capacity of the eggs to resist adverse environmental conditions for a long time. Further, the mode of infection being contaminated, the spread also tends to be very simple as it directly depends upon the existing sanitary and hygienic conditions of the environment.

Ascariasis is a common parasitic disease caused by *Ascaris lumbricoides*, which lives within the lumen of the human small intestine. When alive, the roundworm appears reddish-yellow but the dead worm looks milky white in colour. The adult female is about 35 cm in length with a straight tail end, while the adult male is smaller with a curved tail end. In general, they look more or less like a common earthworm.

Although the disease is widespread in both temperate and tropical countries, owing to the faecal-oral mode of infection, it is more prevalent in countries where sanitation facilities are inadequate and human excreta are used as manure in vegetable farming.

How the disease spreads
Fertilized eggs laid by female worms in the intestine of the infected person pass out with the host’s faeces at an early stage in their development. In suitable environmental conditions, i.e., in warm and moist soil with proper aeration, they develop into embryo in a period of 2-3 weeks before they become infective. However, in adverse environmental conditions the eggs may remain viable for as long as 7 years or perhaps longer, but direct sunlight can destroy them in a few weeks. Children or adults on contact with contaminated things may ingest the infective eggs, particularly if they eat

Fig. 1. The roundworms, *Ascaris lumbricoides* expelled from a child's intestine following drug treatment

<table>
<thead>
<tr>
<th>The belief</th>
<th>The truth</th>
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<tbody>
<tr>
<td>1. It is more common in developing countries with favourable climatic conditions.</td>
<td>Although it is more common in developing countries, yet communities with high infection rates have been reported in developed countries, too.</td>
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<td>2. It is more prevalent in humid tropics</td>
<td>This is because the humidity ensures long viability of the fertilized ova and in turn enhances the probability of infection.</td>
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<td>3. The disease occurs more frequently among rural peoples.</td>
<td>True, because usually they lack indoor toilet facilities and understanding of personal hygiene.</td>
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<td>4. Existence of vegetable gardens attached with the house affects its rate of infection in the family.</td>
<td>Even houses without attached vegetable gardens can have comparatively more infection rate, if there prevails an unhygienic environment in the house.</td>
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<td>5. Generally there appears a tendency to consume sweet sugary foods a person harbours the roundworms.</td>
<td>This is because the adult worms inside the host’s intestine steal a considerable amount of carbohydrate to meet their metabolic requirement, which in turn causes deficiency of sugars in the host body.</td>
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Quarantine and quarantine regulations

In many regions of the world certain diseases are endemic, i.e., are always present in the population. Thus, it is evident that diseases spread from a point of infection, and travellers usually spread a disease. In view of this fact, regulations were made in many countries to isolate travellers on their arrival from other country to make sure they brought no disease germs with them. This isolation was called quarantine, and quarantine regulations are still enforced. A person in quarantine is usually isolated long enough to see whether any disease developed.

and thus affecting their physiological activities, as the larvae pass through these organs on their way to lungs. In the respiratory system the migrating larvae cause a variety of clinical symptoms, ranging from a mild cough to severe lung infection accompanied with chest pain and spitting of blood from lung capillaries and at times leading to pneumonia. Too many worms may lead to blockage of the intestine (as the worms may be so numerous that they become twisted into bundles), poor growth and memory loss in the host. Anaemia may also develop, making the host liable to catch other diseases which sometimes may even prove fatal.

How to avoid the worms

There is no single method for complete eradication of all worm-linked diseases, but measures like ensuring better personal hygiene, proper disposal of human excreta together with environmental sanitation and contamination-free municipal water supply can go a long way in controlling the spread of the worm. Further, raw stems, green vegetables, fruits and roots, grown by the use of human manure should be thoroughly washed and cooked properly before being consumed. There are several medicines available which kill the worms and cause their elimination from the body. But the treatment should be given in accordance with physician’s advice.

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OZONE DAMAGE (Continued from page 445)

The manual iodometric method the weekly time range (11.00 am to 2.00 pm) average concentrations ranged between 0.056 ppm to 0.104 ppm during 31 October to 31 December, 1983 at Jalandhar. The iodometric method is prone to interference from other oxidants present in the atmosphere. However, 90% of the measured concentrations are believed to be due to ozone. At Chandigarh, ambient ozone was measured with an ozone-specific monitor during autumn 1984-85. A maximum of 0.08 ppm O3 was measured during the season. These measurements show that phytotoxic levels of ozone (>0.04 ppm) are encountered during the potato season in Punjab.

Typical ozone injury symptoms, as seen on potato leaves under natural field conditions, were produced by artificial ozone fumigation (0.14 ppm) of potted potato plants. Ozone type of injury symptoms have been noted by the author in Punjab on maize, tomato, wheat and beans.

Ozone and its precursors drift long distances to hundreds of km from the source of origin. With increase in the volume of motor traffic the problem is likely to aggravate in near future in India thus warranting thorough evaluation of the extent of impact of ambient ozone on crop plants.

Further reading