Infestation with *Giardia lamblia*—termed giardiasis or lambliasis—is common in the tropical regions of the world. Chandler and Read (1961) found this parasite in 16 per cent of children from Egyptian villages. Chakravarti (1968) found an infestation rate of 21.2 per cent in a hospital in Calcutta. Mathai (1970) found an incidence of 15.4 per cent in 500 cases of diarrhoea in Calicut. Garg and Mehrotra (1972) noted that 6.9 per cent of children with gastrointestinal complaints, attending the Medical College Hospital in Meerut, had giardia infestation.

Giardia inhabits the upper small intestine, especially the duodenum. Hegner (1924) showed that they are attracted by the bile salts. The parasites fasten themselves to the epithelial cells of the small intestine and sometimes large areas of the epithelium are covered by them. They cause mechanical interference with absorption, particularly of fats from the intestine. They probably feed on mucus, the secretion of which is stimulated by their presence, and a variety of aminoacids, vitamins and other substances which are constantly passing in and out of the intestinal mucosal cells (Read 1950).

The belief that giardia is a non-pathogenic organism is no longer valid.

It can produce pathological changes in the intestinal mucosa, such as, abnormal configuration of the villi, increased epithelial mitosis, lymphocytic infiltration and various inflammatory changes (Takano and Yardley 1965). Brandborg *et al.* (1967) demonstrated mucosal invasion by giardia in mucosal suction biopsies from the duodenum and proximal jejunum. Morecki and Parker (1967) demonstrated giardia within mucosal cells by electron microscopy.

Various drugs have been used in the treatment of giardiasis. Mepacrine has been widely used (Garaguso 1959) but it is likely to cause nausea and vomiting in the majority of cases and may also cause yellowish discoloration of the skin. Other drugs which have been used are: Chloroquin (Loutfy 1960), amodiaquin (Rosenberg and Neumann, 1957), acetalarosol (Contarutti and Boniver, 1957) and Intestopan (Russo *et al.* 1962). Currently, two of the commonly used drugs are furazolidone (*Furoxone*) and metronidazole (*Flagyl*).

**Patients and Methods**

The material comprises 81 cases of giardiasis seen over a period of nine months, from April 1971 to December 1971, at the Medical College Hospital, Meerut.

A fresh specimen of faeces, obtained from children attending the outpatient department with gastrointestinal
complaints, was examined microscopically for the presence of cysts or vegetative forms of giardia and also for the presence of any other cysts, ova or vegetative forms of other protozoal or helminthic parasites. In each case, a saline preparation and a slide stained with Lugol's iodine were examined. Of these, 81 cases which showed the presence only of giardia were included in the trial and those with mixed infestations were excluded. In each case a complete physical examination was done.

The children showing infestation with giardia were randomly allocated to two groups: Group A was given metronidazole (Flagyl) in a dose of 20 mg./kg./day, and Group B was given furazolidone (Furoxone) 6 mg./kg./day. In either case, the drug was given in three divided doses and for a period of 7 days.

The stool examination was repeated twice after the completion of the treatment and an evaluation of the complaints was also made. A second course of the same drug was repeated if the parasite was detected.

The response to therapy was evaluated as follows:

1. Success: Complete remission of symptoms and disappearance of parasite from the stools.

2. Parasitic failure: Remission of symptoms but parasite still present in the stools.

3. Failure: Persistence of parasite in the stools and of symptoms.

Observations and Comment

Of the 81 children with giardiasis, a majority (70.4%) were between the age of 2 and 9 years. The youngest patient was 8 months old. Males were affected twice more commonly as females. This does not reflect any predilection for the male sex as we see in general that more male patients are brought to hospital as compared to females.

The commonest symptom was loose stools (82.7%), which were bulky and frothy in 28.4%. Pain in the abdomen was complained of by 60.5% of children, anorexia was noted in 23.4% and two patients had urticaria. The occurrence of steatorrhea has been reported by Contarutti and Boniver (1957) and Gherman (1953). Bittel-Dobrzynka et al. (1962) reported two cases of haemorrhagic diathesis in children due to thrombocytopenia in the course of giardiasis. Garaguso (1959) mentioned hypertrophy of fungiform papillae of the tongue, nasal pruritis, anorexia, neuropathies, periodic acute diarrhoea and skin affections in association with giardiasis. Apart from periodic acute diarrhoea we have not come across any of these conditions. Nair (1970) described symptoms in 150 children from Trichur and noted that giardia was responsible for malabsorption and failure to thrive in a majority.

After a course of 7 days, the stools became free of giardia and symptoms disappeared in 95.6% per cent of cases treated with Flagyl and in 94.4% cases treated with Furoxone. In 4 cases of parasitic failure, i.e. abatement of symptoms but persistence of parasite in the stool, two in each group, the original