

Gastric myiasis

Role of the lesser housefly

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M yiasis is defined as "the infestation of live human and vertebrate animals with dipterous larvae which, at least for a certain period, feed on the host's dead or living tissue, liquid body substances, or ingested food."¹ The incidence and types of myiasis often depend on hygienic or socioeconomic factors as well as on geographic location. We describe a case of gastric myiasis or pseudomyiasis in a geographic area where either the occurrence or the recognition of these infestations is uncommon.

Case report

A 65-year-old woman was admitted to hospital with complaints of nausea, vomiting, and diarrhea. Her husband had brought in a sample of her

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vomitus from the previous day, which contained material resembling worms. The patient was anorexic and had been nauseated periodically with vomiting for many months and had been having episodes of diarrhea for the previous 7 to 8 months. Worms had not been noted previously. She denied eating anything unusual. The family dog had been checked by a veterinarian and had been given a clean bill of health, specifically regarding worms.

Her medical history was not significant. She was not taking any medications and denied having any allergies. Both she and her husband are known alcoholics. She denied ethanol abuse or recent drinking but was noted to smell of alcohol and admitted to consuming 450 mL of spirits the previous night.

On examination the patient was tremulous and hyperreflexic but fully oriented. Her pulse rate was 78 beats per minute and regular, her blood pressure was 180/100 mm Hg, and her temperature was 37.4°C. Results from the examination of her head, neck, and chest were unremarkable. Her abdomen was mildly tender in the lower quadrants, but there was no organomegaly or palpable masses. Rectal examination results were normal. Her immediate treatment included prophylactic sedation and

vitamin therapy for preventing complications of alcohol withdrawal.

Investigation results. The vomitus specimen (approximately 40 g) containing "worms" was referred to the reference parasitology laboratory for identification. Approximately 40 to 50 larvae were recovered from the vomitus. These larvae (*Figure 1*) were identified as those of the lesser housefly, *Fannia canicularis*. Results of stool samples submitted for ova and parasites were negative.

Chest x-ray and electrocardiogram results were normal. Hemoglobin level was 151 g/L on admission but 119 g/L after hydration. White blood cell count was $11.3 \times 10^9/L$, with a normal differential; platelet count was slightly diminished at $114 \times 10^9/L$; and the erythrocyte sedimentation rate was elevated at 65 mm/h. Random glucose level was 4.87 mmol/L; blood urea nitrogen was 2.8 mmol/L of urea; creatinine level was 61 $\mu\text{mol/L}$; total bilirubin was 22.4 $\mu\text{mol/L}$; direct bilirubin was 8.5 $\mu\text{mol/L}$; alkaline phosphatase was 80 U/L; serum glutamic-oxaloacetic transaminase was elevated at 103 U/L; serum glutamic-pyruvic transaminase was elevated at 56 U/L; and amylase was elevated at 177 U/L. Follow-up enzyme determinations revealed γ -glutamyl transpeptidase was elevated at 78 U/L; serum glutamic-oxaloacetic transaminase remained elevated at 69 U/L; serum glutamic-pyruvic transaminase was elevated at 45 U/L; and amylase was 22.79 U/L. Electrolytes were within normal levels, and the bilirubin level fell to 8.2 $\mu\text{mol/L}$.

Treatment. Treatment consisted of intramuscular thiamin injections and oral multivitamins. Tremor was controlled with chlorthalidone. Mebendazole (100 mg bid) was administered for 3 days until the organism in the vomitus was identified. The patient's stay in hospital was uncomplicated, and the diarrhea settled. The patient was discharged with no further medication or follow-up examination.

Discussion

Myiasis is common in domestic and wild mammals worldwide.² Myiasis in humans can occur frequently in rural settings where people live in close contact with domestic animals and can be produced by numerous different species of flies. Flies causing myiasis are grouped into three main categories.

The first group includes species that require a host for completion of larval development. The second group includes species that develop in a host if entry is facilitated by the presence of wounds or sores; however, development can be completed without a host. The third group is the accidental invaders that usually complete larval development without a host but, in rare instances, can develop in a host.

Accidental myiasis can occur if fly eggs are deposited on lips, within the mouth, or on food. When swallowed, development can proceed in the stomach or the intestine. Fly larvae in the alimentary canal have been associated with nausea, pain in the abdomen, vomiting, diarrhea, dysentery, and nervousness. In many instances, these cases result from flies laying eggs on such foods as fish, cold meat, cheese, and ripe fruit.³ Under normal circumstances, these organisms are destroyed in the stomach; however, some can survive and appear in the stool or vomitus.

This case is typical of accidental myiasis. One difficulty in pinpointing the source of the larvae was the unreliable and often vague history given by both the patient and her spouse. In addition to the larvae, the vomitus also contained partially digested (but recog-

nizable) pasta and vegetable fibres. With repeated questioning, it was evident that the larvae were present in the vomitus at the time of ejection (rather than a result of subsequent contamination). We speculate that this woman ate infested food. Some larvae were

tomts with the presence of larvae because they might have been present for only a short time (less than 2 hours). Adelson⁴ says that gastric emptying depends on the size and content of a meal, with a light meal taking 0.5 to 2 hours to digest. More likely, the

patient's symptoms related to ongoing alcohol abuse and alcohol-related gastritis.

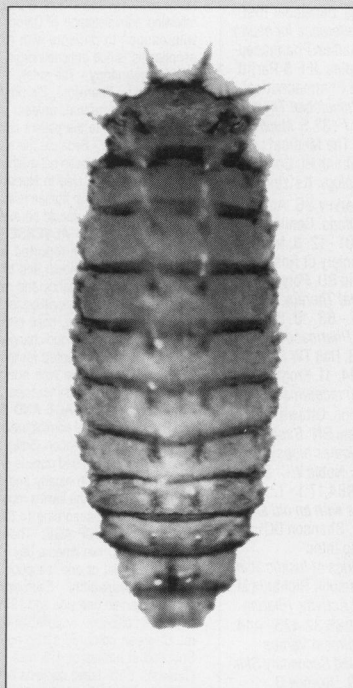
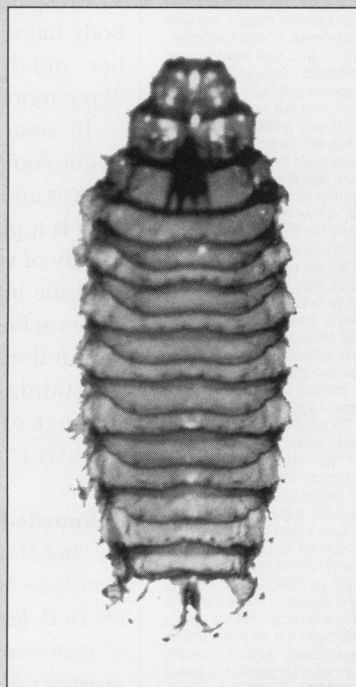
This patient could have been at additional risk because of her poor living conditions. We speculate that unprotected and unrefrigerated cooked pasta was infested with fly larvae and was eaten by the woman while she was intoxicated.

Fannia canicularis lays about 50 to 100 eggs. The eggs are most commonly laid on food, urine-soaked bedding, compost heaps, decaying piles of grass, human and animal excretions, and poultry litter.² They generally hatch after 1 to 2 days, and larval development takes 1 to 2 weeks. It is difficult to establish how long the food was exposed to the environment because both this woman and her husband denied eating anything unusual and maintained that foods were always kept in the refrigerator and not

left open to the air for long periods. However, if flies had deposited eggs on this food and the eggs hatched into larvae, then the food must have been exposed for at least 1 to 2 days but less than 2 weeks according to the life cycle of this fly.

Although the incidence of gastric myiasis caused by *F canicularis* might be thought of as common, cases have not been reported. Service² believes that true intestinal myiasis in humans with

Figure 1. Larva of the lesser housefly, *Fannia canicularis*



apparently alive during collection, and we suspect that consumption was shortly before vomiting because not all larvae were killed by gastric secretions.

Results of subsequent stool cultures were negative for ova and parasites and for fly larvae. It might be that larvae were passed in the stool before the stool sample was collected or that they were not detected. Possibly all of the larvae were ejected in the vomitus. For that reason, it is difficult to relate the symp-

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BRIEF PRESCRIBING INFORMATION


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Full prescribing information available on request.

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Diarrhea may be an early symptom of incomplete intestinal obstruction, especially in patients with ileostomy or colostomy. In such cases, treatment with Ditropan would be inappropriate and possibly harmful. Ditropan may produce drowsiness or blurred vision. The patient should be cautioned regarding activities requiring mental alertness, such as operating a motor vehicle or other machinery or performing hazardous work while taking this drug. Alcohol or other sedative drugs may enhance the drowsiness caused by Ditropan. Pretreatment examinations should include cystometry, and other appropriate diagnostic procedures. Cystometry should be repeated at appropriate intervals to evaluate response to therapy. The appropriate antibiotic therapy should be instituted in the presence of infection. **PRECAUTIONS -** Ditropan (oxybutynin chloride) should be used with caution in the elderly and in patients with autonomic neuropathy, hepatic or renal disease. Administration of Ditropan in large doses to patients with ulcerative colitis may suppress intestinal motility to the point of producing a paralytic ileus and precipitate or aggravate toxic megacolon, a serious complication of the disease. The symptoms of hyperthyroidism, coronary heart disease, congestive heart failure, cardiac arrhythmias, tachycardia, hypertension and prostatic hypertrophy may be aggravated following administration of Ditropan. Ditropan should be administered with caution to patients with hiatal hernia associated with reflux esophagitis, since anticholinergic drugs may aggravate this condition. **Use in Pregnancy -** The safety of Ditropan in pregnancy has not been established. Therefore, Ditropan should not be used in women of childbearing potential, unless, in the opinion of the physician, the expected benefit to the patient outweighs the possible risk to the fetus. **Use in Children -** Because the safety of Ditropan in children under the age of five has not been established, use of the drug in this age group is not recommended. **Use in Nursing Mothers -** It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when Ditropan is administered to a nursing woman. **ADVERSE REACTIONS -** The following adverse reactions have been reported with Ditropan (oxybutynin chloride) administration: dry mouth and throat, difficulty swallowing, decreased sweating, urinary hesitancy and retention, blurred vision, dilation of the pupil, cycloplegia, increased ocular tension, palpitation, tachycardia, chest pain, syncope, flushing, nose bleed, drowsiness, weakness, dizziness, headache, insomnia, mood changes, nausea, vomiting, anorexia, metallic taste, constipation, bloated feeling, edema, impotence, suppression of lactation, interference with normal heat regulation, severe allergic reactions or drug idiosyncrasies including urticaria and other dermal manifestations. **DOSAGE AND ADMINISTRATION -** Ditropan Tablets and Syrup are for oral administration. **ADULTS:** The usual dose is one 5 mg tablet or one teaspoon (5mL) syrup two or three times a day. The maximum recommended dose is one 5 mg tablet or one teaspoon (5mL) four times a day. In elderly and debilitated patients, it is advisable to initiate treatment at the lowest recommended dosage and to increase the dosage carefully according to tolerance and response. **CHILDREN OVER 5 YEARS OF AGE:** The usual dose is one 5 mg tablet or one teaspoon (5mL) two times a day. The maximum recommended dose is one 5 mg tablet or one teaspoon (5mL) three times a day. **DOSAGE FORMS:** Availability - Each scored bioconvex, blue tablet engraved with Ditropan on one side and 1375 on the scored side contains 5 mg of oxybutynin chloride. Supplied in bottles of 100 and 500 tablets. Each 5 mL of green coloured syrup contains 5 mg of oxybutynin chloride. Supplied in bottles of 473 mL. **Composition -** Inactive Ingredients (Tablets): Each tablet contains calcium stearate, FD & C Blue #1 lake, lactose and microcrystalline cellulose. Inactive Ingredients (Syrup): Contains citric acid, FD & C Green #3, flavour, glycerine, methylparaben, sodium citrate, sorbitol, sucrose and water.

Product Monograph is available upon request.

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GASTRIC MYIASIS

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Fannia species does not occur. Rather, the real threat relates more to the large numbers of diseases that can be transmitted by houseflies.

The main mechanisms by which houseflies can transmit diseases are 1) carrying organisms on their feet, body hairs, and mouth parts; 2) ingestion and deposition of fecal spots; and 3) regurgitation of their vomit.

In areas or groups where socio-economic conditions and hygiene are poor, myiasis and infection with microorganisms is a potential problem because a variety of viral, bacterial, rickettsial, or parasitic infections can be transmitted by houseflies. As the number of homeless individuals increases and where substandard food is consumed, the number of people at risk for gastric myiasis is likely to increase. ■

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