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Gastrointestinal Complications of AIDS: Radiologic Findings

Marc A. Bernstein, MD,* Jeremy J. Hollerman, MD,* and Peter J. Feczko, MD*

The acquired immunodeficiency syndrome (AIDS) is a significant health problem. Patients with this disease develop unusual infections and neoplasms, many within the gastrointestinal tract. Of the 66 AIDS patients seen over a three-year period at Henry Ford Hospital, 25 patients had AIDS-related gastrointestinal disease, with one death attributed to this cause. The radiologic findings and pathologic correlation of this experience are presented. (Henry Ford Hosp Med J 1987;35:20-5)

The prevalence of the acquired immunodeficiency syndrome (AIDS) is increasing. Approximately 35,000 AIDS cases were reported by the end of 1986, and an estimated 16,000 cases were diagnosed in 1986 alone (1). As many as 300,000 people may have AIDS by 1991, with the number of AIDS deaths in that year projected to rise to 54,000 (1). Unusual infections and malignancies are associated with this syndrome; many AIDS patients have gastrointestinal manifestations with consequent morbidity and sometimes mortality.

Sixty-six AIDS patients were seen at Henry Ford Hospital over a three-year period. Twenty-five of these patients were found to have gastrointestinal disease by radiologic studies, endoscopy, laboratory tests, and by autopsy. Of these 25 patients, one died secondary to severe cytomegalovirus (CMV) enteritis leading to multiple areas of small bowel necrosis and perforation.

Presenting symptoms of AIDS-related gastrointestinal disease include dysphagia, nausea, vomiting, abdominal pain, diarrhea, proctalgia, and melena or hematochezia. The Table lists the gastrointestinal disease entities seen and the frequency of each disease. Several patients had more than one disease.

<table>
<thead>
<tr>
<th>Disease</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptic disease</td>
<td>7</td>
</tr>
<tr>
<td>Monilial esophagitis</td>
<td>5</td>
</tr>
<tr>
<td>Abnormal small bowel fold pattern</td>
<td>4</td>
</tr>
<tr>
<td>Kaposi's sarcoma</td>
<td>3</td>
</tr>
<tr>
<td>Cytomegalovirus esophagitis/gastritis/enteritis</td>
<td>3</td>
</tr>
<tr>
<td>Herpes simplex proctitis</td>
<td>2</td>
</tr>
<tr>
<td>Cryptosporidiosis of small bowel</td>
<td>1</td>
</tr>
<tr>
<td>Non-Hodgkin’s lymphoma</td>
<td>1</td>
</tr>
<tr>
<td>Nonspecific proctitis</td>
<td>1</td>
</tr>
<tr>
<td>Cytomegalovirus proctitis/colitis</td>
<td>1</td>
</tr>
<tr>
<td>Giardiasis</td>
<td>1</td>
</tr>
<tr>
<td>Chlamydia proctitis</td>
<td>1</td>
</tr>
</tbody>
</table>

Several patients had multiple disease entities.

Infections

Esophagus

*Candida albicans* is the most common cause of esophagitis in AIDS patients (2); other causes include herpes simplex virus and CMV. Infectious esophagitis is often difficult to differentiate radiologically. A diffuse ulcerative appearance along with nodules and plaques may be seen (Fig 1). Disordered motility is common. Patients with less extensive involvement may have discrete esophageal ulcers.

Stomach and duodenum

The esophagus, stomach, and small bowel of AIDS patients are affected by many of the same infectious agents. Involvement of the stomach with CMV, herpes simplex virus, and even *Candida albicans* has been reported (3). Radiologically, these infections produce a similar appearance with thickened rugal folds, mucosal erosions, and sometimes spasticity during fluoroscopy (Figs 2 and 3). Abnormalities of the stomach can extend into the duodenal bulb and proximal small bowel. These changes may be difficult to differentiate from changes seen in peptic inflammatory disease (Fig 4). Biopsy is often necessary.

Small bowel

In patients with AIDS, the small bowel can be involved by various infections. Agents commonly seen include CMV, disseminated *Mycobacterium avium-intracellulare* (4), cryptosporidium (5), herpes simplex virus, *Giardia*, and shigella. The agents, however, are often difficult to isolate.

Radiologically, the small bowel changes include bowel wall thickening and a disordered small bowel fold pattern (Figs 5 and 6).
Fig 1—Diffuse esophagitis in an AIDS patient with involvement of the upper gastrointestinal tract by Candida albicans.

6). Dilatation of the small bowel along with areas of spasm may be seen. Increased secretions may be present as suggested by flocculation of the barium.

Colon

Viral infections of the colon are common, and CMV is most frequently identified (6). The distribution of disease tends to favor the rectum, but a pancolitis or segmental colitis can be present (7). Ileocolitis may be seen.

Approximately 20% of our AIDS population had infections of the colon. Two patients had herpes simplex colitis, and one patient had chlamydia proctitis. Nonspecific colitis/proctitis with no identifiable organism was seen in one patient.

Fig 2—Fold thickening and punctate barium collections in gastric involvement with cytomegalovirus.

Fig 3—Small erosions are seen in the duodenal bulb in this case of cytomegalovirus duodenitis.
Fig 4—Gastric biopsy demonstrating viral inclusion bodies of cytomegalovirus.

Radiologically, these infections produce mucosal granularity, bowel wall thickening, and spasm (Fig 7). When present in the rectum or as a pancolitis, they may mimic ulcerative proctitis or colitis. When the disease is segmental in distribution or confined to the ileocecal region, it may appear similar to Crohn’s disease (Fig 8).

Neoplasms

Kaposi’s sarcoma

The most common neoplasm associated with AIDS is Kaposi’s sarcoma (8). Prior to AIDS, this neoplasm was rare and was seen mainly in elderly men. The course in these patients was relatively benign, with manifestations often confined to the skin. Visceral involvement occurred late in the disease, if at all.

Unlike this classical form, Kaposi’s sarcoma in AIDS patients commonly involves the viscera. It rapidly disseminates to involve multiple areas including the lungs and gastrointestinal tract with common involvement of abdominal lymph nodes.

Fig 5—The small bowel folds are thickened with Mycobacterium avium-intracellularare infestation of the small bowel. Small bowel infections tend to produce nonspecific findings of thickening valvulae, mild dilatation, and hypersecretion.

Fig 6—Mycobacterium avium-intracellularare from a liver biopsy in a patient with disseminated infection.
Eig 8 (above)—Area of segmental narrowing and mucosal granularity is seen in the transverse colon of an AIDS patient with cytomegalovirus enteritis and chlamydia proctitis.

Fig 7—Postevacuation film of the right side of the colon in a patient with cytomegalovirus colitis. Note marked nodularity and bowel wall thickening.

Kaposi's sarcoma can occur anywhere in the gastrointestinal tract. Within the stomach, multiple mucosal and submucosal nodules can be seen (Fig 9). Some nodules undergo central ulceration with a target lesion appearance on barium examination. Diffuse involvement of the small bowel is characterized by a fine-to-coarse granular pattern with fold thickening (Figs 10, 11, and 12). Large solitary masses are infrequent.

In our series, Kaposi's sarcoma was less common in the colon than in the upper gastrointestinal tract. The three patients with Kaposi's sarcoma had upper gastrointestinal involvement; only one of these patients also had involvement of the colon. This patient had a proctitis on endoscopy, and Kaposi's sarcoma was reported on rectal biopsy.

Fig 9 (right)—Several nodular masses can be seen in the stomach of this AIDS patient with Kaposi's sarcoma metastatic to the stomach.
This gastric biopsy from an AIDS patient shows involvement with Kaposi's sarcoma.

Fig 10—Note thickened duodenal folds in this AIDS patient with autopsy-proven Kaposi's sarcoma of the duodenum. A large polypoid mass of Kaposi's sarcoma is also present in the stomach.

Fig 11—Small bowel involvement with Kaposi's sarcoma in the same patient as in Fig 10.

Fig 12—This computed tomography scan demonstrates marked rectal wall thickening secondary to involvement with non-Hodgkin's lymphoma.

Fig 13—Cecal wall thickening is evident secondary to involvement with non-Hodgkin's lymphoma.
Non-Hodgkin's lymphoma

The other major neoplasm seen in AIDS patients is non-Hodgkin's lymphoma. One patient in our series presented with a large rectal mass. The barium enema examination demonstrated a rectal and cecal mass. The abdominal computed tomography scan showed wall thickening in the rectum and cecum and a mass in the upper pole of the right kidney (Figs 13 and 14). Biopsy of the rectal mass was reported as non-Hodgkin's lymphoma (Fig 15).

Summary

AIDS-related gastrointestinal disease is a significant cause of morbidity and mortality. Radiologic studies of the gastrointestinal tract, though relatively nonspecific, can demonstrate early disease and disease extent.

Acknowledgments

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References


Fig 15—This rectal biopsy from the patient with rectal wall thickening shown in Fig 13 demonstrates poorly differentiated non-Hodgkin's lymphoma.