

Plasmacytoma-Associated Obstruction of the Small Intestine in a Patient with Multiple Myeloma

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Multiple myeloma is a B-cell malignancy that usually presents with bone marrow infiltrates of neoplastic plasma cells.¹ Extramedullary manifestations are common in advanced stages of the disease. Involvement of the gastrointestinal tract, however, is found in fewer than 5% of autopsies of patients who have died of complications of multiple myeloma.² In such instances, the spread of multiple myeloma to the gastrointestinal tract is generally discovered incidentally and is rarely associated with clinical symptoms.³

Intestinal obstruction caused by gastrointestinal neoplastic infiltrates of multiple myeloma is even rarer. Only a few such cases are on record as being diagnosed radiologically before a patient's demise.⁴⁻⁸ Recognition of this complication is, nevertheless, important, because the neoplastic mass can be surgically resected, resulting in prolonged patient survival. This article describes a case of intussusception of the small intestine caused by multiple myeloma, illustrating the correlation between the radiologic and pathologic findings.

CASE PRESENTATION

History and Physical Examination

A 55-year-old white woman developed colicky abdominal pain associated with nausea and an urge to vomit several months after being treated for multiple myeloma with radiation and administration of melphalan and prednisone. The disease had been generally refractory to treatment. Current physical examination was suggestive of an obstructive process, and a radiologic examination was requested.

Radiologic Findings

After a preliminary radiograph of the abdomen was obtained, the patient was given 400 mL of barium through a nasogastric tube. Spot films of the small in-

testine with compression were then obtained, as were additional overhead radiographs at appropriate time intervals. Imaging was continued until contrast media could be identified within the ascending colon.

Results of radiography revealed mild distension of the proximal loops of the small intestine. The degree of distension was most pronounced in the lower abdomen, near the midline. At this location, spot films showed tapering of the intestine proximal to a large intraluminal filling defect, with invagination of this probable mass into the intestinal lumen distally (**Figure 1**)—findings consistent with intussusception. The intestinal wall proximal to the intussusception showed uniform thickening. Subsequent axial computed tomography (CT) scans confirmed that the intussusception was caused by an intraluminal mass (**Figure 2**).

Surgery

A laparotomy was performed, and the abdominal cavity was inspected. The site of intussusception was identified in the distal small intestine, and a 10-cm length of small intestine was resected. Several lymph nodes were removed, and a 2-cm white hepatic nodule was excised. All specimens were submitted for pathologic examination. The patient recovered uneventfully from the laparotomy, and treatment with etoposide, dexamethasone, cytarabine, and cisplatin was initiated

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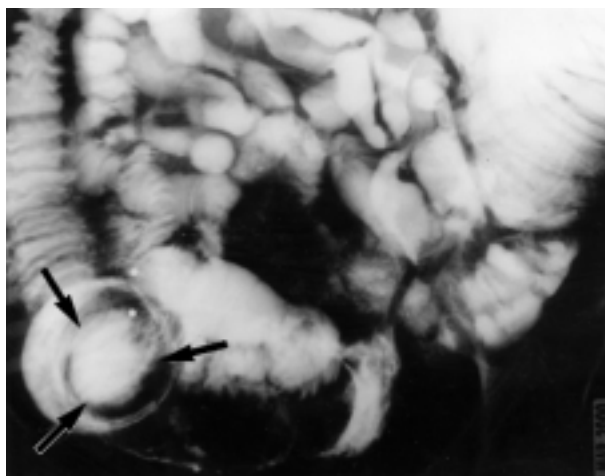


Figure 1. Radiograph of the case patient's barium-filled intestine showing circular invagination of one small intestinal loop into another (arrows).

3 months postoperatively. The disease was unresponsive to chemotherapy, however, and the patient died a month later.

Pathologic Findings

The intestinal loop was first palpated and photographed (**Figure 3A**). The loop was found to contain an indurated central portion consisting of an intestinal tumor intussuscepted into the loop distal to it. Once the intestinal segment was opened with scissors, it became apparent that the tip of the intussusceptum consisted of a broad-based 6-cm lobulated nodule protruding into the intestinal lumen (**Figure 3B**). Histologically, the tumor was composed of atypical plasma cells and was unequivocally diagnosed as a malignant plasma cell neoplasm (ie, plasmacytoma), consistent with extramedullary small intestinal involvement of multiple myeloma (**Figure 3C**). The lymph nodes from the abdominal cavity contained nonneoplastic cells. The liver nodule, however, was composed of malignant plasma cells, consistent with hepatic involvement by multiple myeloma.

DISCUSSION

Multiple myeloma is a B-cell malignancy affecting the bone marrow of middle-aged and elderly persons. The diagnosis is based on the presence of a monoclonal gammopathy and demonstration of neoplastic plasma cells in the bone marrow. Typical complications include anemia, fractures, hypercalcemia, amyloidosis, renal failure, and superimposed infections.⁹ Extramedullary extension of neoplasia may lead to the for-

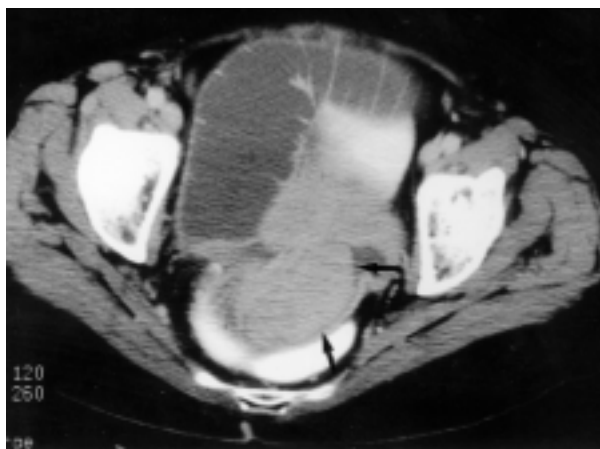


Figure 2. Computed tomography scan of the case patient's abdomen showing tumor at the site of the intussusception with dilated proximal intestinal loops (arrows, lower central part of the figure).

mation of neoplastic masses in various sites, including the gastrointestinal tract. Autopsy studies indicate that 65% of multiple myeloma patients have evidence of extramedullary extension of their disease.⁴

As previously indicated, obstruction of the intestines is a rare complication of multiple myeloma. Such obstructions can occur as a result of paralysis of the intestinal smooth muscle, extraintestinal lesions (eg, adhesions), twisting or kinking of the intestinal loops, and intraluminal masses (**Table 1**). The intestinal obstruction noted in our patient could have been caused by any of these intestinal or extraintestinal lesions, and thus it was essential to determine the nature of the obstruction radiologically. Once the intussusception was diagnosed radiologically, a surgical intervention was the only possible approach to dealing with this acute and potentially lethal complication of the case patient's chronic disease. The final diagnosis was made microscopically on the surgically resected intestinal tumor.

Gastrointestinal symptoms of multiple myeloma depend on the site of tumor formation and the size of the lesion. Symptoms reported in the literature include pain, hemorrhage, obstruction, intussusception, fistula, and rupture of the viscus.² Symptomatic gastrointestinal involvement is associated with mass lesions, which are usually recognizable radiologically. Such lesions must be biopsied or resected to obtain the final pathologic diagnosis. In the absence of microscopic examination, multiple myeloma of the gastrointestinal tract cannot be distinguished from primary intestinal or metastatic carcinomas, lymphomas, and various gastrointestinal sarcomas.

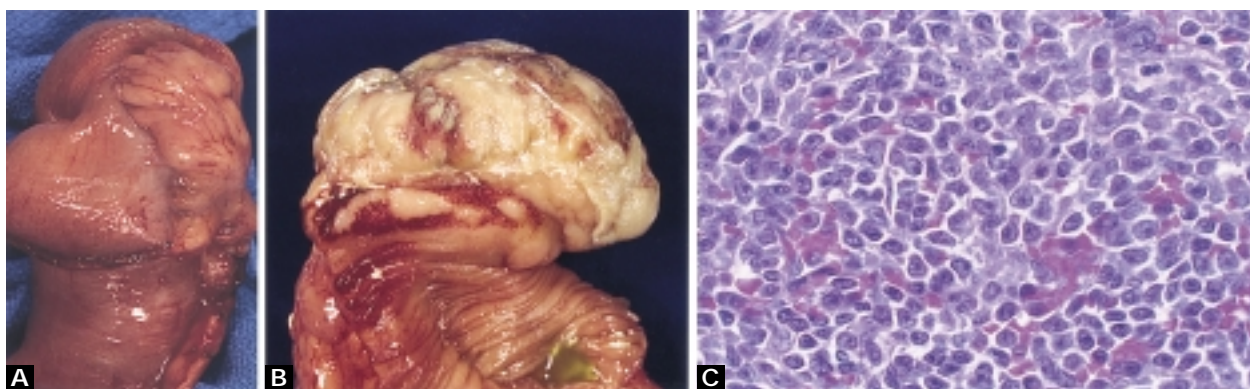


Figure 3. Pathology specimen from the case patient. (A) External appearance of the intussuscepted small intestine. The intestinal loop containing the intussusceptum (lower part of the panel) appears congested and edematous and is thus darker than the proximal unaffected part of the intestine. (B) Tumor at the tip of the intussusceptum was seen after the intestinal segment was opened and everted. (C) Photomicrograph of the tumor showing malignant, atypical plasma cells.

Table 1. Differential Diagnosis of Intestinal Obstructions

Paralytic ileus
Extraintestinal compression or kinking of loops
Adhesions
Hernia
Tumors
Volvulus
Intussusception
Tumors
Hyperactive peristalsis
Foreign bodies

The pathologic diagnosis of gastrointestinal extension of a preexisting multiple myeloma is relatively easy, provided the pathologist is informed of the clinical history. Without such a history, the solitary lesions of multiple myeloma are indistinguishable from primary gastrointestinal plasmacytoma, a relatively rare form of B-cell neoplasia.⁸ These primary gastrointestinal plasmacytomas can be solitary or multiple. Multiple myeloma also must be distinguished from gastrointestinal marginal zone lymphomas (so-called *MALTomas*) composed of B lymphocytes that show a tendency for plasmacytic differentiation.⁹

Gastrointestinal involvement of multiple myeloma may result in multiple or solitary nodules.⁶ It is not known why some patients have solitary lesions, whereas others have multiple nodules or infiltrates presenting

as polyposis.¹⁰ The tumor masses found in patients with multiple myeloma do not differ from those that evolve as solitary extramedullary plasmacytomas. Follow-up of several patients who had solitary intestinal plasmacytomas found that the intestinal lesion was just the first sign of a systemic disease in some of them⁵; metastases could be expected to develop in local lymph nodes in most of these patients.

In the present case, the dominant solitary intestinal mass was accompanied by hepatic involvement, but there were no other apparent intestinal lesions. However, the presence of multiple myeloma in the liver indicated the widespread nature of this patient's disease. In such instances, surgical treatment is palliative rather than curative. Nevertheless, resection of the intussuscepted intestine relieved an acute life-threatening obstruction and thus prolonged this patient's life. The precise radiologic diagnosis, followed by appropriate surgical intervention, is vital in the treatment of gastrointestinal lesions that develop in some patients with multiple myeloma.

SUMMARY

Our patient developed intestinal intussusception as a result of metastasis of her multiple myeloma. The barium contrast study, coupled with the CT scans, allowed us to make the diagnosis of intussusception, which was caused by a tumoral involvement of the small intestine by multiple myeloma. Surgical resection of the tumor provided prompt relief and prolonged the patient's life. We thus show that an accurate diagnosis and prompt clinical intervention are essential in the treatment of tumor-related intussusception, a rare but nonetheless life-threatening complication of multiple myeloma. HP

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