Benefits of Endorectal Ultrasound for Management of Smooth-Muscle Tumor of the Rectum

Report of Three Cases

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Smooth-muscle tumor of the rectum is rare, and the therapeutic strategy is still controversial. Endorectal ultrasound was used to evaluate three patients with smooth-muscle tumor of the rectum. Endorectal ultrasound demonstrated a homogenous hypoechoic tumor without invasion to the perirectal tissue in two patients. The tumor was 5 cm in diameter in one patient and 4 cm in diameter in the other patient, and they were excised locally. Their histologic types were leiomyoma and leiomyosarcoma. The third patient had a recurrent leiomyosarcoma. Proctosigmoidoscopy found a linear lesion with ulcerated mucosa on the rectal wall. Endorectal ultrasound observed a hypoechoic solid tumor of 3.5 cm × 1 cm, which involved the mucosal, submucosal, and muscle layers of the rectal wall. Disruption of the first hypoechoic layer was identified. Abdominoperineal resection was performed. Endorectal ultrasound follow-up revealed no evidence of recurrence in any of these patients. Endorectal ultrasound can help to define the extent of disease and may be a useful adjunct in deciding about the appropriate surgical procedure in these diseases. [Key words: Smooth-muscle tumor; Rectum; Endorectal ultrasound]

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Myogenic tumors of the rectum are rarely encountered and their management is still controversial. The conventional imaging techniques, such as barium enema, proctoscopy, or computed tomography and digital rectal examination have been used for the preoperative investigation of these diseases.[1] However, the distinction between a benign and a malignant tumor is difficult with these procedures and is made only by histologic examination.[2, 3] Moreover, there is not a generally accepted optimal surgical approach, because the tumors tend to recur locally even after radical resection. Recently, endorectal ultrasound (EUS) has been used for preoperative assessment of rectal tumors and has proved to be a very useful and accurate method.[4–6] We present our experience of EUS in aiding the diagnosis for myogenic tumors of the rectum and the application of EUS in adjusting adequate surgical management.

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REPORT OF CASES

Case 1

A 73-year-old female was hospitalized with a one-month history of occasional passage of bright blood *per rectum*. Physical examinations were otherwise negative. Laboratory tests, including hemogram, liver function tests, and blood biochemistry, were all within normal limits. Proctosigmoidoscopy found a mass 5 cm above the anus, bulging posteriorly in the rectum from the 6 to 9 o'clock positions, with an intact mucosal surface. EUS (7.5 m Hz, Brüel and Kjaer, Nacrum, Sweden) was performed with the patient lying in left lateral position. A latex sheath was placed over the ultrasonic transducer at the distal tip of the probe. The probe was inserted 15 cm and then withdrawn after filling the sheath with distilled water. The target area was then scanned by moving the instrument backward and forward. EUS examination revealed a tumor 4 cm in diameter, with a smooth margin, arising from the proper muscle layer of the rectum (Fig. 1). The tumor showed a homogenous

hypoechoic pattern without invasion into the perirectal tissue. No evidence of lymph node involvement could be detected on EUS. The tumor was locally excised by a transsacral approach. Histologic examination revealed a low-grade leiomyosarcoma of the rectum. The patient remained well and asymptomatic two years later. EUS follow-up revealed no evidence of recurrence of this disease at that time.

Case 2

A 56-year-old male came to our hospital complaining of tenesmus and passing small-caliber stools for one year. He was in apparent good health. Physical and laboratory examinations revealed no abnormality. Digital examination showed a rectal mass 3 cm from the anal verge. At proctosigmoidoscopy a bulging mass was seen in the rectum extending into the lumen on the right rectal wall. EUS disclosed a well-defined tumor, 5 cm in diameter, with a homogenous hypoechoic pattern (Fig. 2). On EUS the tumor expanded the second hypoechoic layer, indicating muscularis propria. There was no sign of invasion into the perirectal tissue nor involvement of regional lymph nodes. Local excision of the tumor was performed transanally. Histologic study revealed a leiomyoma of the rectum. The recovery period was uneventful and the patient was discharged in satisfactory condition one week after the operation. Histologic study demonstrated a benign leiomyoma of the rectum. The patient underwent strict follow-up postoperatively. EUS revealed that he was free of tumor two years later.

Case 3

A 42-year-old male was admitted to our hospital for a recurrent rectal tumor. He underwent transanal excision of a rectal tumor at another hospital three years before this admission. The tumor was 6 cm in diameter and was histologically diagnosed as rectal leiomyosarcoma. Postoperatively, he remained asymptomatic for a further three years before developing a recurrence, which was found on a follow-up proctoscopic examination. He was referred to our hospital for a detailed investigation of the recurrence. At physical examination he was found in good general condition. Chest x-ray, abdominal ultrasound, and blood biochemistry were normal. A rectal examination revealed a hard and rubbery longitudinal mass measuring 3.5 cm × 1 cm. Proctosigmoidoscopy found a linear lesion with ulcerated mucosa on the posterior wall of the rectum and 1 cm adjacent to the anal verge. EUS observed a hypoechoic solid tumor of 3.5 cm × 1 cm, which involved the mucosa, submucosal, and muscle layers of the rectal wall (Fig. 3). Disruption of the first hypoechoic layer was identified. Expansion of the mucosa with some degree of irregularity related to the submucosa and muscle layers was observed. An abdominoperineal excision of the rectum was performed. Histology again showed features consistent with leiomyosarcoma. He remained well and asymptomatic 1 year after the second surgery.

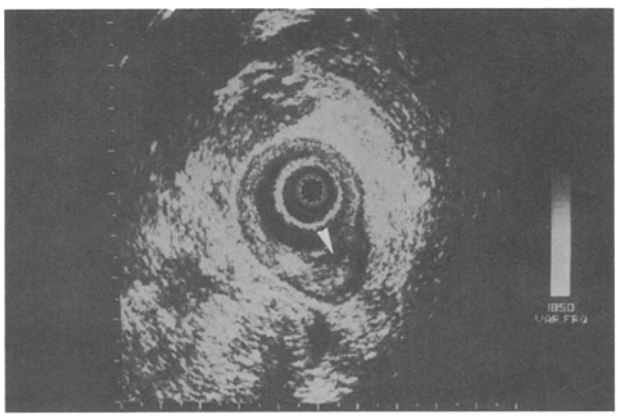

Figure 1. Patient 1. Endorectal ultrasound image showing a hypoechoic tumor with well-defined border. The tumor grows within the muscularis propria (arrowhead).

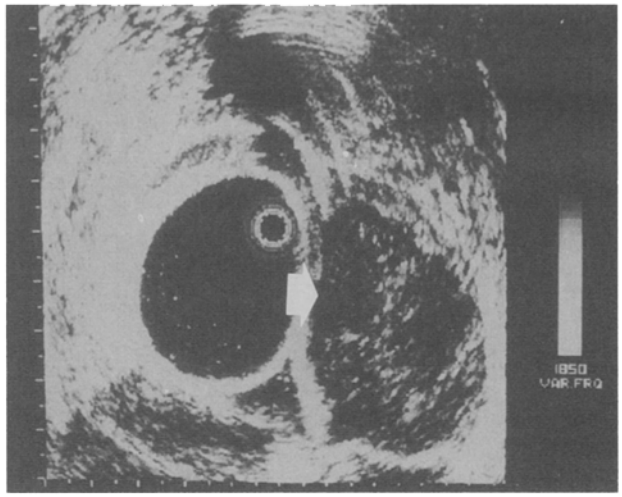

Figure 2. Patient 2. Endorectal ultrasound image showing a hypoechoic well-delineated tumor that involves the muscularis propria (arrow).

DISCUSSION

There is no standard treatment for rectal myogenic tumors at present, because of their rarity. A local excision is usually sufficient for the complete cure of a benign rectal leiomyoma, although malignant trans-

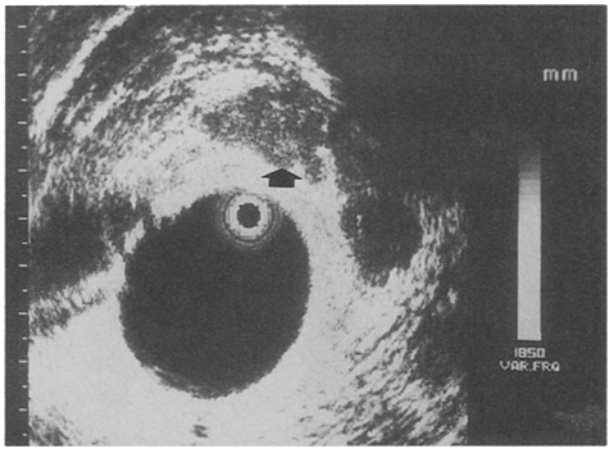

Figure 3. Patient 3. Endorectal ultrasound showing the tumor growing within the muscularis propria (arrow) and protruding forward into the submucosal and muscle layers. Expansion of the first hypoechoic layer with some degree of irregularity of the submucosal and muscle layers was found.

formation of a benign smooth-muscle tumor has been emphasized previously.[7,8] On the other hand, the treatment of rectal leiomyosarcoma is still controversial. Furthermore, an adequate staging method for gastrointestinal leiomyosarcomas has not been elucidated. Several therapeutic modalities may be involved in the treatment of leiomyosarcomas of the rectum, including low anterior resection, abdominoperineal resection, local excision, and nonoperative therapy.[8–13] The choice of surgical approach for a rectal leiomyosarcoma depends mainly on clinical and histopathologic findings. Recently, EUS has proved to be the preferred modality in preoperative assessment of rectal neoplasia with regard to depth of invasion and nodal involvement.[4–6] EUS is of substantial value because it permits accurate demonstration of each layer structure in the rectal wall. Thus, the extent and depth of tumor invasion are readily assessed, as they were in our cases. The presence of metastatic spread to the regional lymph node can also be detected.

Because the origin and invasiveness of the tumor could be determined by EUS preoperatively, the differentiation between a benign and malignant tumor became possible. The extent of surgical resection can thus be decided. Two of our patients were thought to have a tumor sufficiently localized, as assessed by clinical examinations and EUS, to be suitable for wide local excision; the other patient had abdominoperineal resection. As long as adequate tumor clearance has been obtained, there is probably no long-term difference in survival rates between those treated initially by wide local excision *vs.* those treated by radical resection.[10,12] Some authors[14] recommended that features such as small tumor size, absence of ulceration, and fixation offer a good chance of survival with local excision. Usually macroscopic examination revealed that the rectal mucosa was relatively uninvolved by the tumor tissue, despite the large size of the neoplasm. In our third patient an ulceration on the mucosal surface could be found on proctoscopy. This finding of mucosal invasion could be correlated with that of EUS and pathologic examinations. In such a situation radical surgery is recommended. Review of previous data concluded that site of the primary tumor did not affect survival and that size was important only if adjacent structures were involved and not completely excised.[15] However, local recurrence is also a common problem in the management of rectal leiomyosarcoma. Previous findings indicated that local excision of those tumors arising from the muscularis propria of the rectum resulted in a high local recurrence rate regardless of the degree of differentiation of the tumor, but long-term survival figures were similar whether the tumors were treated by local or radical techniques.[16] From our limited experience we recommend that more accurate staging methods are mandatory for the patient to select appropriate treatment and to compare properly groups of patients treated with different modalities. Moreover, EUS may be a useful adjunct in deciding about the appropriate surgical procedure when conservative surgery is intended, because it can help to define the extent of the disease.

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