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Malignant Fibrous Histiocytoma: A Method to Control Intraoperative Hemorrhage by Clamping the Feeding Arteries

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ABSTRACT

Malignant fibrous histiocytoma (MFH), also referred to in the past as malignant fibrous xanthoma and fibroxanthosarcoma, is a tumor of mesenchymal tissue origin. A case of retroperitoneal MFH was reported. In this paper, we describe a method of hemostasis and intraoperative control of hemorrhage during resection of retroperitoneal MFH by snaring the feeding arteries. The patient was successfully operated on using this technique.

INTRODUCTION

Malignant fibrous histiocytoma (MFH) is the most common adult soft tissue sarcoma (3, 8, 12, 14, 20), comprising 10% to 21% of all such tumors (16, 17). The tumor most frequently arises from deep fascia or skeletal muscle in an extremity. The thigh is the single most common site of origin followed by an upper extremity, the chest and retroperitoneum (5, 18). Retroperitoneal tumors account for only 9 to 16% of all reported cases. Occasionally the tumor becomes evident as a huge mass in the retroperitoneal space in which case, laparotomy shows extensive tumor involvement of both visceral and parietal peritoneum with diffuse thickening of each. It is sometimes difficult to resect such a tumor due to feeding arteries around the surface or primary involvement of large vessels around the tumor. In this case, we employed temporal occlusion of feeding arteries and large vessels around the tumor using a rubber tube for control of bleeding during resection of a giant retroperitoneal MFH.

CASE REPORT

A 62-year old woman was admitted to Sendai National Hospital in February 1998 with the complaint of constipation with stools and sever left thigh pain of recent onset. She was found to have a large mass in the left retroperitoneal cavity by computerized tomography (CT) scan. Physical examination revealed a firm, fixed left lower quadrant mass in the midclavicular line.

Her medical history was unremarkable. Results of laboratory studies, including complete blood count and blood chemistry, were within normal limits. A CT scanning revealed a large retroperitoneal mass with heterogeneous low-density contents, with extension to the pelvic sidewall and the lower surface of the left kidney. Magnetic resonance (MR) imaging performed to characterize the tumor further, confirmed the findings of the CT scanning. The tumor was shown as a heterogeneous, huge mass occupying left retroperitoneal cavity (Fig. 1A). MR imaging sagittal cut showed a large mass elevating the left kidney (Fig. 1B).

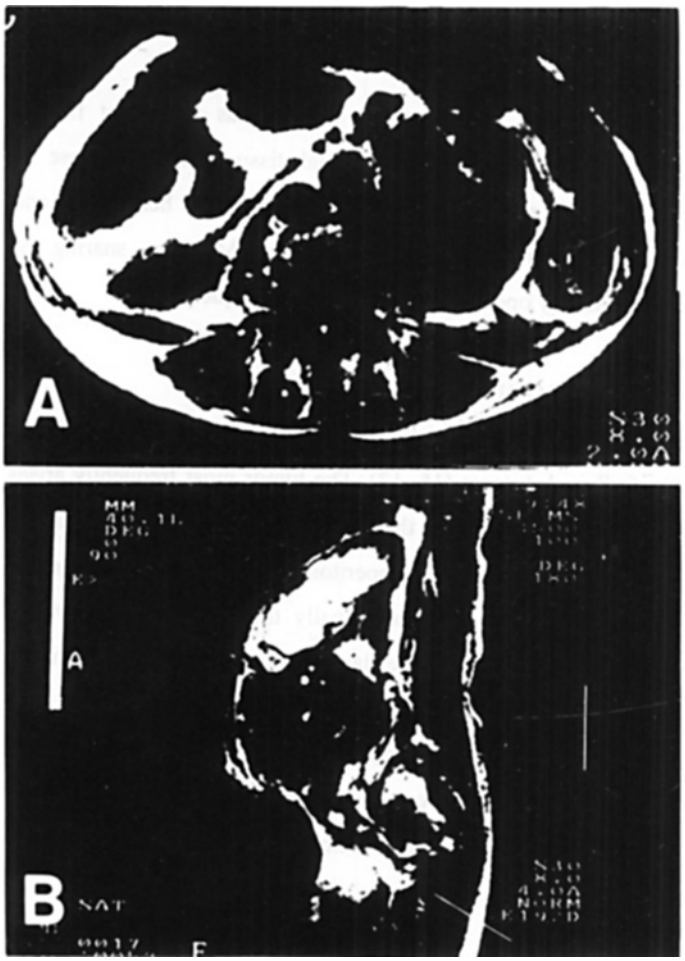

Figure 1. Preoperative MRI scan. (A) Transaxial view of retroperitoneal MFH (arrow). (B) Sagittal view through the central portion of the tumor (arrow). The anterior surface of the patient is to the left.

Barium enema revealed left lateral deviation and extrinsic compression of the descending colon by a large retroperitoneal mass, but otherwise was normal. Abdominal angiography showed a giant abdominal mass to be relatively hypovascular with stretching of the inferior mesenteric

artery, from which several feeding vessels entered into the tumor. After adequate bowel preparation, the patient was taken to surgery where laparotomy revealed a fixed mass in the left lower quadrant which extended to the base of the mesentery. The mass elevated the left kidney superiorly and the descending colon medially and adhered to the left common iliac artery from which some feeding arteries were seen. The mass was first thought to be unresectable since the operator could not insert even his hand into the space between the mass and parietal wall of the retroperitoneal space due to profuse bleeding from the feeding arteries. The left common iliac artery, inferior mesenteric and left renal arteries were then surrounded with rubber tape just below their parts near the root. The ends of the tape were brought through a rubber tube that was 5 cm long to form a snare. The loop was tightened and secured with a hemostatic clamp to occlude the vessels. As the retroperitoneal mass adhered to the mesocolon, an excision with mesocolon with adequate tissue margin was performed using electrocautery, while keeping the vessels occluded during the excision for on hour. The resultant defect was closed. As the mass was found to invade directly to the left kidney, left nephrectomy was performed. The tumor was easily dissected off the pelvic wall. After removal of the tumor, the vessels were intermittently opened to locate the bleeding vessels and hemostasis was completed. The snare was then removed, after which the abdominal wound was closed in layer.

Four weeks later, the patient commenced radiotherapy to the tumor bed and a total of 30 Gy in 20 fractions were delivered over 30 elapsed days.

DISCUSSION

The most common site of primary involvement of the genitourinary tract by MFH is the kidney. The patient presented in this report underwent wide local excision with left nephrectomy. Radical removal of involved organ is recommended for MFH. The great deterrent to resection of a tumor is the risk of hemorrhage due to the organ`s vascularity or large vessels around it. The feeding arteries or large vessels around tumors can be clamped without hazard for a long period in spite of the vulnerability of the alimentary tract to anoxia. In this case, clamping of the common iliac, inferior mesenteric and left renal arteries has been successfully used to achieve quick hemostasis in hemorrhagic MFH. It does not, however, allow the control of hemostasis after tumor removal, since the clamp can only be manipulated through a laparotomy. After excision the main bleeders were found to be on the parietal wall of retroperitoneal space, probably being branches of the left common iliac artery. Good hemostasis was achieved with this method; there was no major tumor hemorrhage as was suspected preoperatively. The present technique allows intermittent opening of the feeding arteries and control of hemorrhage arising

from the abdominal tumor.

Despite the aggressive surgical approach, local recurrence rates for this disease are still high, ranging 44% to 67% (4, 11, 16). MFH is a radiosensitive tumor, and radiotherapy is a highly effective treatment modality. Postoperative radiation therapy can be very successful in preventing local recurrence after surgical excision (7, 9, 10, 19). The metastatic rate for MFH after radical surgery ranges from 23% to 42% (11, 16), and adjuvant chemotherapy is indicated in the management of these tumors. Doxorubicin is reported to be the most effective chemotherapeutic agent for soft tissue sarcomas. It is also the most commonly used drug in the treatment of MFH (1, 2, 6). Prolonged remissions in patients with unresectable MFH have been reported using combination chemotherapy and radiation therapy (13, 15). Although retroperitoneal MFH portends a very poor prognosis, wide local resection with adjuvant irradiation and doxorubicin-based chemotherapy is the treatment of choice for tumors amenable to surgical intervention.

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