Case Report

Utility of 18F-Fluorodeoxyglucose Positron-emission Tomography/ Computed Tomography in the Detection of Primary Colonic Malignancy Presenting as an Inguinoscrotal Hernia

Abstract

Carcinoma of the sigmoid colon presenting in an inguinoscrotal hernia is uncommon. Many of the cases seen in literature were diagnosed only intraoperatively, as most of them had misleading presentations. We report a case of carcinoma of the sigmoid colon in an incarcerated inguinoscrotal hernia with imaging findings of 18F-FDG PET/CT along with a brief review of the literature.

Keywords: *Inguinoscrotal hernia, positron-emission tomography/computed tomography, sigmoid colon carcinoma*

Anitha Mandava, Veeraiah Koppula, Zakir Ali Abubakar[1]

Departments of Radiodiagnosis and [1]Nuclear Medicine, Basavatarakam Indo American Cancer Hospital and Research Institute, Hyderabad, Telangana, India

Introduction

Although inguinal hernias and carcinomas of the colon are commonly seen conditions in elderly patients, carcinoma of the sigmoid colon presenting with an inguinoscrotal hernia is rare. The diagnosis is difficult to make on clinical basis alone and most often made intraoperatively. We present a patient diagnosed with carcinoma of the sigmoid colon in an incarcerated left inguinoscrotal hernia along with hepatic metastases.

Case Report

A 77-year-old man presented with a history of dyspepsia and altered bowel habits of 4 months. Physical examination revealed mild hepatomegaly and a left-sided irreducible inguinoscrotal hernia. Investigations revealed elevated carcinoembryonic antigen (CEA) levels (9.63 μg/L). Ultrasound of the abdomen and scrotum revealed mild hepatomegaly with multiple focal hypoechoic lesions in the liver and bowel loops in the left inguinoscrotal region. The patient underwent colonoscopy, but the scope could not be passed beyond the proximal sigmoid colon due to abrupt luminal occlusion at this level. Evaluation with 18F-fluorodeoxyglucose (18F-FDG) positron-emission tomography (PET)/ computed tomography (CT) was done. CT of the abdomen revealed herniation of the descending colon and sigmoid loops into the left inguinoscrotal hernia [Figure 1], small pericolonic lymph nodes, and multiple hepatic metastases. Focal, irregular and asymmetric circumferential sigmoid colonic wall thickening was seen with adjacent fat stranding and gross luminal narrowing in the scrotal sac. PET showed increased 18F-FDG tracer uptake in the sigmoid colon loop within the left inguinoscrotal hernia, along with hypermetabolic pericolonic lymph nodes and hepatic metastases [Figure 2]. The patient was taken up for diagnostic laparoscopy, and intraoperative findings showed growth involving the sigmoid colon incarcerated in the scrotal sac. Multiple liver metastases and few mesenteric lymph nodes were also seen, and the malignancy was assigned the surgical stage of pT3pN2aM1a. An open sigmoid colectomy with liver metastasectomy that included partial resection of left hemiliver with sparing of segment IVA and excision of metastases in segment IV B and VI was performed. Histological examination of the excised specimen revealed adenocarcinoma of the sigmoid colon. Patient was given postoperative adjuvant chemotherapy using folinic acid, 5-fluorouracil, and oxaliplatin (FOLFOX) regimen.

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Address for correspondence:
Dr. Anitha Mandava,
1-7-139/75, S. R. K. Nagar,
Risalagadda, Musheerabad,
Hyderabad - 500 034,
Telangana, India.
E-mail: kanisri@gmail.com

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Discussion

Malignancies occurring in inguinal hernias are uncommon with an estimated incidence rate of 0.4%.[1,2] Worldwide incidence of colorectal carcinomas is about 10.2%, and the incidence of inguinal hernias is about 1.7%.[3,4] Even though both these conditions are frequently seen in elderly men, primary colonic malignancy occurring in an inguinoscrotal hernia is very uncommon. The first such case was reported by Gerhardt in 1938, and since then, literature search revealed fewer than 40 cases with this diagnosis.[1,4]

Chern *et al*. have documented the relative frequency of various parts of the colon and other organs involved in the malignancies occurring in inguinoscrotal hernias.[4]

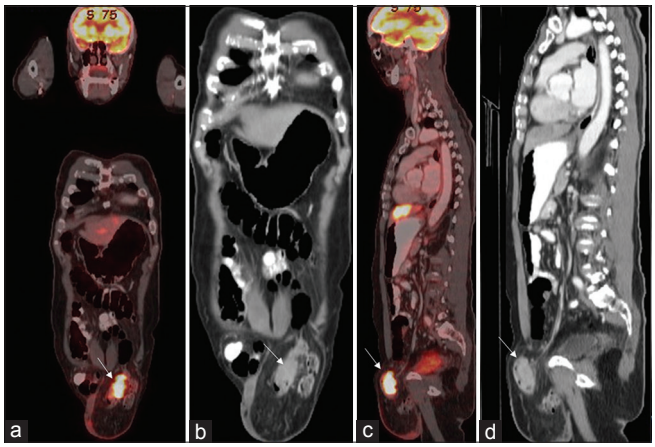

Figure 1: (a and c) Coronal and sagittal formatted computed tomography images show herniated colonic loops in the left inguinoscrotal hernia. Focal thickening of the bowel wall (arrows) with adjacent fat stranding is also seen. (b and d) Coronal and sagittal positron-emission tomography/computed tomography fusion images show fluorodeoxyglucose uptake in the lesion suggestive of possible malignancy (arrows)

Among these, the most common primary malignancy was carcinoma of the sigmoid colon (71.1%), followed by carcinoma of caecum (15.8%), ascending colon (5.2%) and rarely, gastrointestinal, genitourinary, and skin malignancies have also been reported.[2,4,5] Carcinomas of sigmoid colon occurring in inguinoscrotal hernias are most commonly found on the left side. The reason for this is attributed to its proximity to the left inguinal region and also the anatomical location, extent, and mobility of the sigmoid colon.[5-7] The presence of sigmoid colon malignancy in the right inguinoscrotal hernia is extremely rare, and review of the literature revealed only three cases.[6,8,9]

Most of the cases of colonic malignancies occurring in inguinoscrotal hernias were seen in men >70 years (mean age = 71.7 years).[4] Majority of these patients are asymptomatic and often have neglected, long-standing hernias.[2] The growth of the malignant lesion within the hernias coupled with the delay in diagnosis may lead to fatal complications and patients can present with sudden symptoms of pain and incarceration. Previous case reports show that patients have often presented as acute emergencies with sepsis, strangulation, obstruction, volvulus, and perforation involving the bowel.[1,7-10]

In asymptomatic patients, the presence of inguinal hernia is not associated with any increase in risk for colorectal malignancy and does not warrant screening procedures.[5,11] A recent history of loss of weight, change in bowel habits, anemia, and bleeding in an elderly male with an inguinal hernia, should always be viewed with suspicion.[1,5,6] If a previously reducible hernia becomes progressively enlarged or irreducible with symptoms of obstruction and/or incarceration, an underlying colonic neoplasm has to be ruled out.[1,5,6] An incidental or unexpected malignancy discovered during surgery can be an unpleasant surprise

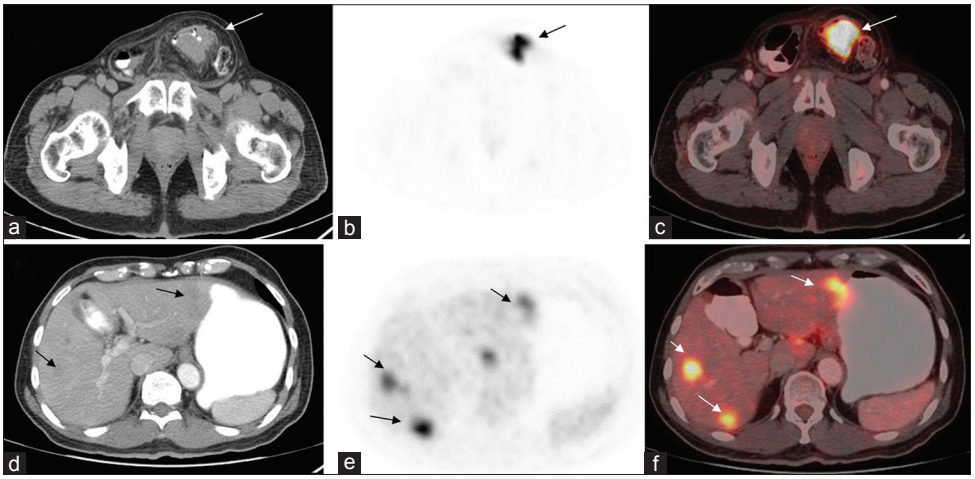

Figure 2: (a) Axial contrast-enhanced computed tomography images of the abdomen and scrotum show heterogeneously enhancing eccentric sigmoid colonic mass lesion with luminal narrowing and adjacent fat stranding in the left inguinoscrotal hernia (arrow). (b and c) Axial positron-emission tomography and fused fluorodeoxyglucose positron-emission tomography/computed tomography images show the hypermetabolic lesion with fluorodeoxyglucose uptake (arrows). (d) Axial contrast-enhanced computed tomography image shows multiple heterogeneously enhancing soft-tissue density lesions in both lobes of the liver (arrows). (e and f) Axial positron-emission tomography and fused fluorodeoxyglucose positron-emission tomography/computed tomography images show multiple hypermetabolic lesions with fluorodeoxyglucose uptake in the liver (arrows)

to the surgeons, as they may need to modify or extend the surgery. Furthermore, any metastases found during surgery completely alter the intraoperative and postoperative management, hence, a thorough preoperative evaluation is needed in these cases.

Complete clinical examination, CEA levels, colonoscopy and if possible, a biopsy should be performed. Radiological investigations such as ultrasound examination of the abdomen and scrotum may show the contents of the hernias, including bowel loops, but the evaluation of the extent of lesions and surroundings is limited.[1] CT is helpful as it shows the bowel wall thickening, extent, and length of involvement, adjacent structures, and other synchronous lesions. Slater *et al*. have reported that preoperative abdominal CT scan has failed to diagnose the presence of an underlying sigmoid cancer in their case of left inguinoscrotal hernia.[2] In cases with suspected bowel wall thickening and malignancy, a preoperative PET/CT may be more accurate than CT, as it can identify the metabolically active lesions. In most of the cases reviewed in the literature, the diagnosis of carcinoma of the sigmoid colon in an incarcerated inguinoscrotal hernia was made intraoperatively, but in our case, PET/CT was helpful in making a definitive preoperative diagnosis. Preoperative PET/CT in these cases is valuable in the detection and localization of primary lesion, lymph nodes, and distant metastases to plan a meticulous treatment strategy. PET/CT is also useful in staging the patient for appropriate postoperative management, including chemotherapy and radiation. Hence, we conclude that performing PET/CT imaging should be considered in the evaluation of inguinoscrotal hernias if an underlying malignancy is suspected.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms for images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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