American Journal of
Biomedical Science & Research

www.biomedgrid.com
ISSN: 2642-1747

Case Report

Giant Mesothelial Inclusion Cyst

Jonathan Barney MD[1]*, Carrisa Schwartz MD[1], Stevie Hoyng M[2,3], Alex Schneller M[2,3], Tayla Nathoo M[2,3], Darin Passer MD[3] and Samer Kalakish MD[3]

[1]*University of Kentucky, at Bowling Green, Department of Surgery, USA*

[2]*University of Kentucky College of Medicine, USA*

[3]*Med Center Health at Bowling Green, USA*

***Corresponding author:** Jonathan Barney MD, University of Kentucky at Bowling Green, Graduate Medical Education, Bowling Green, USA.

To Cite This Article: *Jonathan Barney MD*, Carrisa Schwartz MD, Stevie Hoyng M, Alex Schneller M, Tayla Nathoo M, et al. Giant Mesothelial Inclusion Cyst. Am J Biomed Sci & Res. 2023 19(5) AJBSR.MS.ID.002634,* DOI: 10.34297/AJBSR.2023.19.002634

Received: July 28, 2023; **Published:** August 11, 2023

Abstract

A male in his 70's presented for evaluation of an inguinal hernia, complaining of constipation and intermittent bulging in the right inguinal area; however, on examination a protuberant mass was appreciated in the central lower abdomen. The patient was stable and had no prior knowledge of the mass. An air-filled, lobular structure of the sigmoid colon, 17 cm in greatest dimension was identified on CT. Imaging from six months prior showed typical diverticulosis of the sigmoid colon, but nothing consistent with the size of the current lower abdominal mass. The patient was taken for exploratory laparotomy, small bowel resection with primary anastomosis, Hartmann's procedure, partial cystectomy, and ureteral stent placement. Pathology showed a mesothelial inclusion cyst, also known as benign cystic mesothelioma. Such cysts have only ever been reported in literature up to 200 times, [1] and are more common in women, especially of reproductive age [1-6].

Keywords: Surgery, Radiology, Abdomen, Cyst, Mass, Resection, Mesothelial, Giant, Laparotomy

Introduction

A benign mesothelial inclusion cyst is a rare diagnosis with less than 200 being reported since 1979 [1-2] with an overall estimated incidence of 1 in 100,000 for adults and 1 in 20,000 for children [3]. Here we report a case of a male in his 70's who presented with complaints of constipation and right inguinal bulge, who was found to have a large abdominal mass that was pathologically confirmed to be a mesothelial inclusion cyst. The patient in our case had a unique presentation of this disease given the fact that he was male. It is known that the prevalence of mesothelial inclusion cysts is much higher in females, and usually those of reproductive age [1-6]. A factor that added to the complexity of this case was the extensive amount of adhesions caused by the mass which required multiple resections of the patient's bowel, colon, and bladder, for definitive repair; as a combined effort by both general surgery and urology. There have been cases associated with adhesions in the literature [1] though to our current knowledge, none have presented with such pervasive adhesions as our patient had. Though rare, providers should keep mesothelial inclusion cysts in their differential for abdominal mass, and the possibility of extensive adhesions should be considered during preoperative planning as this can add much complexity to surgical resection. Finally, our patient also presented with concurrent diverticulosis. On review, only one other case was found where the patient also had diverticular disease, and in that case the mesothelioma was found in the appendix rather than in the sigmoid colon [4].

Presentation and Operative Course

A man in his late 70's presented to the General Surgery clinic, with a past medical history of Parkinson's Disease, diverticulosis, myocardial infarction, coronary artery bypass graft hypertension, hypercholesterolemia, and right inguinal hernia repair, for assessment of left groin pain. The patient denied any urinary or gastrointestinal symptoms. Physical exam findings were consistent with an easily reducible right inguinal hernia, and a left inguinal

hernia which was only appreciated upon standing. Due to the patient's cardiac history, he was advised to obtain cardiac clearance before consideration of bilateral inguinal herniorrhaphy. A Computed Tomography (CT) of the abdomen and pelvis was performed to evaluate the hernias further. The CT was consistent with a right inguinal hernia with protruding fat and uncomplicated diverticulosis, and no other abnormal findings. The patient had an extensive cardiac work-up over the course of several months that showed no appreciable cardiac disease that would preclude surgery. He presented back to clinic for preoperative planning with complaints of continued bulging of the right groin and new onset constipation. Upon physical examination, a protuberant mass of the lower abdomen was noted. Due to this unforeseen change, another CT of the abdomen was completed. This new CT revealed a 17-centimetre lobular, cyst-like air collection in the lower abdomen and pelvis extending to the sigmoid region was observed and interpreted to be most consistent with a giant colonic diverticulum. The patient was scheduled for an exploratory laparotomy with bowel resection three days later.

The mass was easily identified during the exploratory laparotomy. A loop of small (ileal) bowel was adhered to the mass and had to be resected before the sigmoid colon could be attended to. The sigmoid colon was found to be tightly attached to the posterior portion of the colonic mass. Additionally, there were extensive adhesions encountered surrounding the mass, including to the urachal fat and the urinary bladder. A urologist was urgently consulted intraoperatively for assistance in exposing the bladder. The urologist performed a partial cystectomy of a portion of the bladder that was adhered to the mass, and also placed bilateral ureteral stents in order to help their identification during the subsequent bowel resection. The resection included the portion of small bowel adhered to the mass (Figure 1), as well as the sigmoid colon, and lastly an end colostomy was created. The small bowel, sigmoid colon, and a portion of the bladder that had been resected were sent to pathology along with the giant mass. Upon pathological investigation, the diagnosis of benign mesothelial inclusion cyst (aka mesothelioma) was made; as was focal diverticulum of the small bowel and diverticulitis of the sigmoid colon.

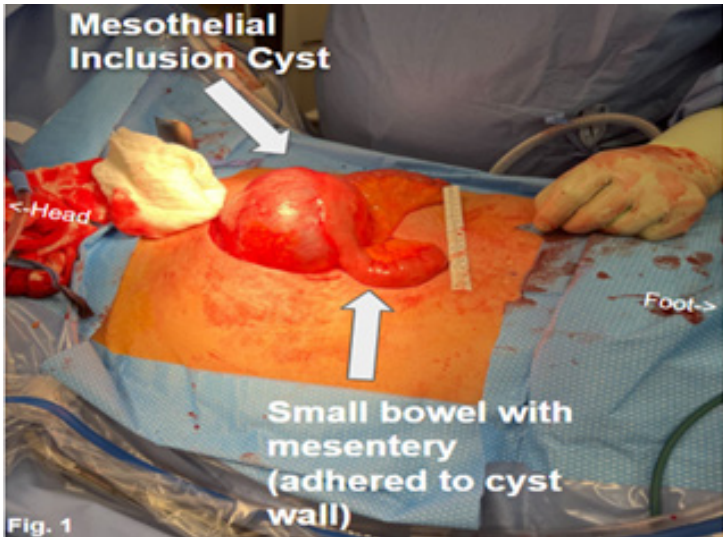

Figure 1: Intraoperative picture displaying the giant mesothelial inclusion cyst, with adherent loop of small bowel and associated mesentery.

The patient's initial presentation - left groin pain, physical exam findings of bilateral hernias, and a CT scan showing a recurrence of a right inguinal hernia-was consistent with bilateral inguinal hernias. Although CT scan also showed diverticulosis, the patient did not complain of gastrointestinal symptoms, thus the diverticulosis was not concerning. Several months later, the patient presented back to clinic with continued bulging of the right groin and new onset constipation. The right inguinal hernia was not appreciable on physical exam, however a protuberant mass in the lower abdomen was noted. Due to a change in symptoms, an additional CT scan of the abdomen/pelvis was ordered. The CT showed a new 17+ centimetre lobular air collection, thus changing the original diagnosis. Given the patient's history of diverticulosis, constipation, physical exam findings, and the aforementioned radiographic findings, a preliminary diagnosis of a giant diverticulum was made. Other possible etiologies considered included malignancy, abscess, or other walled-off air/fluid collection.

At that time, the bilateral hernias were not of immediate concern. It was believed the new constipation was related to the mass effect of the large diverticulum pushing down on his sigmoid colon, and the short time frame over which this mass developed was particularly troublesome; and it was this that ultimately influenced our decision to take the patient to the operating room. Upon inspection during surgery, there were extensive adhesions creating need for multiple resections, however at this point it was still believed that

the diagnosis of a large sigmoid diverticulum was most consistent with the patient's presentation. The resected tissue and mass were sent for a pathological investigation for confirmation of diagnosis.

The final pathology report showed a "benign mesothelial inclusion with adherent portions of the bladder wall", as well as diverticulosis of the small bowel and diverticulitis of the sigmoid colon. The large benign mesothelial inclusion cyst was the culprit of the patient's abdominal fullness and was likely causing a mass effect leading to the patient's constipation. In hindsight, the most specific finding that could have potentially led to the diagnosis of a benign mesothelial inclusion cyst, before the pathology report, was the "17+ centimetre lobular air collection in the lower abdomen and pelvis" found on CT. Though even in hindsight, differentiating this from other possibilities (such as a giant diverticulum) based solely on preoperative imaging and physical exam is quite a challenge.

The patient was admitted to the hospital for surgical resection of the mass with small bowel resection and primary anastomosis, sigmoid colon resection with creation of end colostomy (Hartmann's Procedure), and partial cystectomy with bladder repair, and placement of bilateral ureteral J-stents. This was performed as a combined effort by both general surgery and urology.

Discussion

The patient tolerated the surgery well but required a ten day hospital stay. The hospital stay was lengthened due to the patient's already deconditioned status with Parkinson's Disease as well as the great difficulty in obtaining a swing bed for the patient due to bed shortage in the region. The patient was in rehabilitation for a month. Immediately following surgery, the patient was kept on a strict NPO diet until bowel function returned. Bowel function returned within two days and the patient was able to be advanced to a clear liquid diet. During the hospital and rehab stay, an emphasis on increasing the patient's physical stamina and strength through physical therapy was made. His bowel function was monitored closely, and his diet was advanced accordingly.

The patient's first post-op follow up was on post-op day 29, while the patient was still in a rehabilitation facility. Urology had already assessed the patient, and they were pleased with his recovery from the partial cystectomy and removed his ureteral stents at that visit. From a general surgery standpoint, the patient was adequately progressing. On physical exam, his surgical incision had no sign of infection, and the staples were removed. Colostomy was functioning well and also appeared healthy. Patient had lost 4.337 kg during surgical recovery. It is hard to discern how much of the weight loss was due solely to surgical recovery, in light of his multiple comorbidities. Regardless, the patient ultimately made a satisfactory recovery.

General surgery will continue to follow the patient's recovery, will monitor for cyst recurrence, and will reevaluate the need for intervention for the aforementioned inguinal hernias. This case emphasizes the consideration of mesothelial inclusion cysts as a possible cause of large abdominal masses found incidentally or upon investigation of other abdominopelvic complaints. Intra-abdominal benign mesothelial inclusion cyst, aka cystic mesothelioma, is a rare diagnosis [3]. Smith and Mennenmeyer reported the diagnosis for the first time in 1979 and since then less than 200 cases have been described in the literature [1,2]. They are most associated with young-middle aged women (i.e., reproductive years) and patients who have a history of abdominal surgery [1-6]. Our patient was an older male. He did have a history of previous right inguinal hernia repair, though it's impossible today whether or not this played a role in the formation of the cyst. Patients typically present with non-specific symptoms such as abdominal pain, increasing abdominal girth, nausea, vomiting, constipation, and diarrhea [1-6].

Diagnosis of benign mesothelial inclusion cyst is made through pathological investigation, often showing multiple cystic structures lined with the mesothelium and a fibromuscular stroma [2] Radiology alone can not make a sufficient diagnosis, but findings of a multilocular cystic mass, multiple thin-walled cysts, or a unilocular cystic mass, are all consistent with radiologic descriptions of benign mesothelial inclusion cysts [3]. There are multiple theories involving the pathophysiology of mesothelial inclusion cysts. One theory is that it is of inflammatory origin [1]. The inflammation can be caused by an inflammatory disease or past abdominal surgery [1]. The mesothelial cysts are then likely formed from mesothelial cell entrapment and reactive proliferation [1]. Alternatively, the cyst pathophysiology may be due to hormonal causes, given the higher prevalence in younger women of reproductive age [1,5].

Treatment for benign mesothelial inclusion cysts is surgical removal, however, they have a high recurrence rate; recurring in an average of 32 months according to some sources [6]. Although benign in nature, they also have the ability to transform into neoplastic malignancy [2,6]. In addition to malignancy, complications from not removing such a cyst include hemorrhage, rupture, and infection [1]. Patients should be monitored following resection for possible recurrence.

Conclusion

Benign mesothelial inclusion cysts can cause extensive adhesions. Removal of benign mesothelial inclusion cysts can be complex if adhesions are involved. Benign mesothelial inclusion cysts can present with findings consistent with giant diverticula; as well as other differential diagnoses such as malignancy, abscess, or other walled-off air/fluid collection. Overall, mesothelial inclusion cysts are considered benign; however, they have a high recurrence rate and carry a small but real possibility of malignant conversion.

Acknowledgements

None.

Conflicts Of Interests

None.

References

1. Askar A, Erginoz E, Hanım Yavuz A, Vedat Durgun (2022) Benign multicystic peritoneal mesothelioma presents as a tumor in an elderly man: an uncommon diagnosis. Qatar Med J 2022(1): 5.
2. Salem Y, Farhan A, Aljawder HS, Abdulmenem Abualsel (2021) Benign cystic mesothelioma: a case report on the presentation of an unusual tumor. Int J Surg Case Rep 82: 105918.
3. Canadas S, Fernandes R, Almeida H, João Santiago Correia (2020) A mesothelial inclusion cyst presenting in a 40-year-old woman as abdominal pain and bloating - a rare diagnosis. Eur J Case Rep Intern Med 7(2): 001415.
4. Bansal A, Zakhour HD (2006) Benign mesothelioma of the appendix: an incidental finding in a case of sigmoid diverticular disease. J Clin Pathol 59(1): 108-110.
5. Vallerie AM, Hsieh T, Baxi LV (2008) Peritoneal inclusion cyst: effects on fertility and antepartum course. Obstet Gynecol 112(2 Pt 2): 498-500.
6. Soon DS, Shilton H, Andrabi A (2016) Mesothelial inclusion cyst: a rare occurrence. J Surg Case Rep 2016(12): rjw213.