Early View Article: Online published version of an accepted article before publication in the final form.

Journal Name: International Journal of Case Reports and Images (IJCRI)

Type of Article: Case Report

Title: A huge, pedunculated, multiseptated, cystic myoma misdiagnosed as an ovarian cancer in a imaging studies (CT, MRI and PET-CT)

Authors: Chul Min Park, Sung Yob Kim

doi: To be assigned

Early view version published: May 26, 2016

How to cite the article: Park CM, Kim SY. A huge, pedunculated, multiseptated, cystic myoma misdiagnosed as an ovarian cancer in a imaging studies (CT, MRI and PET-CT). International Journal of Case Reports and Images (IJCRI). Forthcoming 2016.

Disclaimer: This manuscript has been accepted for publication. This is a pdf file of the Early View Article. The Early View Article is an online published version of an accepted article before publication in the final form. The proof of this manuscript will be sent to the authors for corrections after which this manuscript will undergo content check, copyediting/proofreading and content formatting to conform to journal's requirements. Please note that during the above publication processes errors in content or presentation may be discovered which will be rectified during manuscript processing. These errors may affect the contents of this manuscript and final published version of this manuscript may be extensively different in content and layout than this Early View Article.
TYPE OF ARTICLE: Case Report

TITLE: A huge, pedunculated, multiseptated, cystic myoma misdiagnosed as an ovarian cancer in a imaging studies (CT, MRI and PET-CT)

AUTHORS:
Chul Min Park¹, Sung Yob Kim²

AFFILIATIONS:
¹Department of Obstetrics and Gynecology, Medical school of Jeju national university South Korea

CORRESPONDING AUTHOR DETAILS
Chul Min Park
Jeju national university hospital, Aran 13gil 15 (Ara-1Dong) Jeju city, Jeju Self-Governing Province, Korea (63241)
Phone number: +82-64-754-8168
Email: obgymd@gmail.com

Short Running Title: NOT GIVEN

Guarantor of Submission: The corresponding author is the guarantor of submission.
TITLE: A huge, pedunculated, multiseptated, cystic myoma misdiagnosed as an ovarian cancer in imaging studies (CT, MRI and PET-CT)

ABSTRACT

Introduction
A huge, pedunculated, multiseptated, cystic pelvic mass with normal uterus may cause misinterpretation of the CT, MRI and PET-CT as a malignant ovarian epithelial tumor.

Case report
A 56-year-old multipara woman complained of lower abdominal pain, abdominal distension and she consulted to local hospital. CA 125 was 59.6 U/mL and the CT, MRI and PET-CT revealed that a large multiseptated cystic mass (20 cm) with soft tissue parts, multiple hemorrhage and fluid-fluid levels and that the uterus was normal finding with some ascites. Those images suggested that it might be a malignant ovarian epithelial tumor with hemorrhage. We performed an exploratory laparotomy with suspicion of ovarian malignancy and found out that the pedunculated mass was originated from the uterine fundus and that the ovaries were normal. There was a small amount of serous ascites.

Conclusion
In this study, it is suggested that clinicians carrying out differential diagnosis of pelvic mass with increasing serum CA-125 level and ascites should consider not only ovarian cancer but also myoma with cystic degeneration.

Key words: myoma, ovary malignancy, CT, MRI, PET-CT
TITLE: A huge, pedunculated, multiseptated, cystic myoma misdiagnosed as an ovarian cancer in a imaging studies (CT, MRI and PET-CT)

INTRODUCTION
In 1909, the first case of uterine myoma with ascites and hydrothorax was mentioned by Kelly et al [1]. And then Meigs reported that Meigs syndrome is characterized by the presence of benign solid ovarian tumors like fibroma associated with ascites and pleural effusion [2]. Other pelvic tumors such as teratoma, uterine myoma than fibroma associated with ascites and pleural effusion was reported as pseudo-Meigs syndrome [3].

CA-125(Carbohydrate antigen 125, cancer antigen 125, carcinoma antigen 125) is a type of cell surface antigens present in more than 80% of non-mucinous epithelial ovarian cancers. CA-125 occurs in the serum of healthy females at low concentration (<35 IU/mL), however, the concentration appears to be moderately elevated in patients with several benign conditions such as uterine myoma, adenomyosis, and endometriosis [4].

We report an uncommon case of huge, pedunculated, multiseptated, cystic myoma with ascites and high serum CA-125 level (59.6 U/mL) resembling ovarian cancer.

CASE REPORT
A 56-year- old multipara woman complained of lower abdominal pain, abdominal distension and she consulted to local hospital. She had an ultrasonography and serum CA-125 test. It revealed that 16x10cm size, large inhomogeneous mass with some ascites and CA 125 was 59.6 U/mL. She was referred to our hospital under the impression of ovarian cancer. There was nothing remarkable in her medical history until then.

CT and MRI scan revealed that a large multiseptated cystic mass (20 cm) with soft tissue parts, multiple hemorrhage and fluid-fluid levels and that the uterus was normal finding. Those images suggested that it might be a malignant ovarian epithelial tumor with hemorrhage (figure 1). The PET-CT scan showed that large mass with mild, heterogenous FDG uptake (SUV max 3.5) and metabolic defects in
right abdomen and there is no significant abnormal FDG uptake to suggest metastatic lymph node or distant metastasis.

We performed an exploratory laparotomy with suspicion of ovarian malignancy. During the operation, we found out that the pedunculated mass was originated from the uterine fundus and that the ovaries were normal (figure 2). There was a small amount of serous ascites. So, we resected the mass, which was 20 x 18 x 8 cm in size and 1,593gm in weight, and the face of the mass showed cystic degeneration and multiple hemorrhagic lesion (figure 3). The pathology confirmed that leiomyoma with hemorrhage and no evidence of malignancy (figure 4).

DISCUSSION

A solid pelvic mass with ascites and elevated CA-125 level almost means malignant tumor with poor prognosis for patient. But Meigs and pseudo-Meigs syndrome are well-known as benign solid ovarian mass, less commonly uterine myoma, with high CA-125, ascites and pleural effusion [1-3]. Therefore we report an uncommon case of huge, pedunculated, multiseptated, cystic myoma with ascites and high serum CA-125 level (59.6 U/mL) resembling ovarian cancer. The mechanism of the generation of ascites in benign disease like uterine myoma is unclear. Meigs suggested that the ascites may originates from edematous fibromas, which can leak fluid [3]. In case of uterine myoma, a discrepancy between an excessive arterial supply to a large tumor and limited venous and lymphatic drainage might contribute to stromal edema and cystic degeneration with subsequent transudation into the peritoneal cavity [5]. Fluid leakage probably might result from a marked cystic degeneration and intratumoral pressure [6]. Especially in case of pedunculated myoma like our case, twisting of the pedicle of the tumor and its torsion resulting in fluid production has been suggested [7]. And the subserosal location like pedunculated myoma with cystic degeneration might facilitate leakage of fluid into the abdominal cavity [8]. Another theory of ascites in myoma is that cytokines, such as vascular endothelial growth factor(VEGF), fibroblast growth factor(FGF), and inflammatory cytokines(IL-1b, IL-6, IL-8) play roles in the development of ascites[9,10]. The mechanical
irritation in peritoneum from the tumor might cause peritoneal fluid production through a process of peritoneal inflammation [11]. Probably, both a leakage of intratumoral fluid and peritoneal inflammation could contribute to the production of ascites in pedunculated myoma with cystic degeneration like our case. And peritoneal inflammation might be the primary cause of the elevated CA-125. The associated inflammatory reaction of mesothelial cells of peritoneum is probably the very important contributor to the very high serum level of CA-125[12]. Lee et al. commented that giant multiseptated pyomyoma simulating an ovarian cancer showed mild FDG uptake in PET-CT and CA-125 level (59.2 U/mL) less than 500 U/mL as our case. Therefore, If PET-CT show mild FDG uptake and CA-125 level is less than 500 U/mL, although other imaging studies and clinical sign suggest ovarian malignancy, I think we could suspect myoma more than ovarian malignancy[13].

CONCLUSION
We should not rule out the possibility of the uterine mass in the pelvic mass with intact uterus on imaging studies like our case. Especially, gynecologists should always be aware of the possibility of uterine myoma, because that is one of the most common tumors of the female pelvic organ. Therefore, all clinicians carrying out differential diagnosis of pelvic mass with increasing serum CA-125 level and ascites should consider not only ovarian cancer but also huge, pedunculated, multiseptated, cystic myoma.

CONFLICT OF INTEREST
The authors report no conflicts of interest in this work.

AUTHOR’S CONTRIBUTIONS
NOT GIVEN
REFERENCES


**FIGURE LEGENDS**

Figure 1: CT scan showed a large multiseptated cystic mass (20 cm) with soft tissue parts, multiple hemorrhage and fluid-fluid levels and uterus was normal.

Figure 2: Pedunculated mass was originated from the uterine fundus and the ovaries were normal.

Figure 3: The face of the resected mass showed cystic degeneration and multiple hemorrhagic lesion.

Figure 4: The pathology confirmed that leiomyoma with cystic degeneration, hemorrhage and no evidence of malignancy.

**FIGURES**

Figure 1: CT scan showed a large multiseptated cystic mass (20 cm) with soft tissue parts, multiple hemorrhage and fluid-fluid levels and uterus was normal.
Figure 2: Pedunculated mass was originated from the uterine fundus and the ovaries were normal.

Figure 3: The face of the resected mass showed cystic degeneration and multiple hemorrhagic lesion.
Figure 4: The pathology confirmed that leiomyoma with cystic degeneration, hemorrhage and no evidence of malignancy.