DOI: 10.7860/NJLM/2021/45138:2441

Case Report

Pathology Section

Mucinous Adenocarcinoma Arising in a Mature Cystic Teratoma: A Rare Occurrence

V MARISA DSOUZA[1], PREMILA DE SOUSA ROCHA[2], R G WISEMAN PINTO[3], NADINE GRACIAS[4]

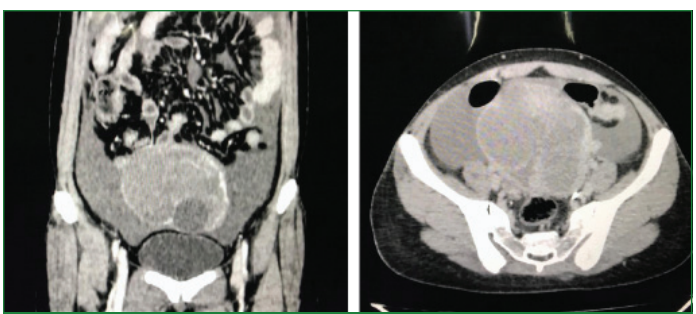
ABSTRACT

Mature Cystic Teratomas (MCT) makeup almost 20% of all ovarian neoplasms. Emergence of a benign or malignant neoplasm with somatic type features is an uncommon event in MCT, occurring in approximately 2% of all cases. Malignancy associated with a MCT is rare and occurs in 1-2% cases. The most common malignancy associated with a MCT is a squamous cell carcinoma, which occurs in 75% of cases, while adenocarcinoma arising from MCT is rare, with an incidence of just 7%. This article presents a case of mucinous adenocarcinoma, arising in a MCT in a 39-year-old female patient who presented with severe abdominal pain and vomiting. Following a diagnostic laparoscopy, which revealed one litre turbid ascitic fluid and evidence of a ruptured large left ovarian cyst, a provisional diagnosis of left ovarian tumour was made. Emergency laparotomy was performed and the specimen of left salpingo-ovariotomy, on histopathological examination revealed grossly a cystic ovarian mass with solid areas on the inner cyst wall. The microscopic picture showed a mucinous adenocarcinoma arising in a MCT.

Keywords: Malignant, Ovary, Transformation

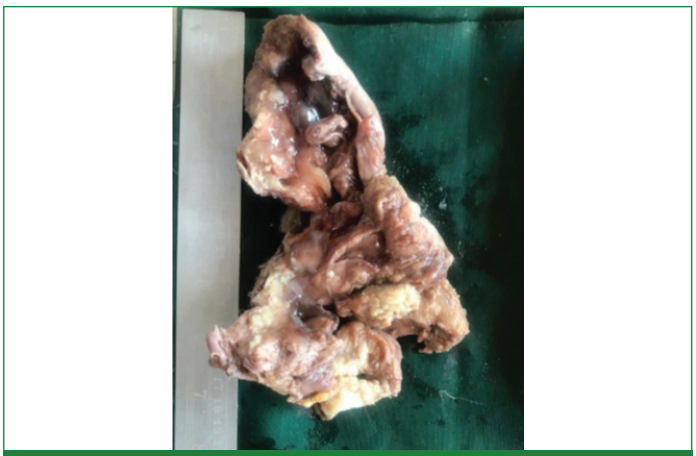
CASE REPORT

A 39-year-old female patient presented with severe griping type of abdominal pain since morning to the emergency room. She had history of one episode of vomiting with sweating two days before. There was no past history of diabetes mellitus/hypertension/bronchial asthma/drug allergies/previous surgery. There was no family history of malignancy or tuberculosis. On local examination, patient was afebrile with blood presure 120/80 mm of Hg, pulse was 102/min. Per abdomen examination revealed no palpable abdominal mass or tenderness, ascites was present, bowel sounds were present with no hepatosplenomegaly. On systemic examination, patient was conscious and oriented,respiratory system was clear and cardiovascular system showed presence of S1 and S2. Routine haematological and biochemical parameters were within normal limits. Chest x-ray and Electrocardiography (ECG) were normal. Computed Tomography (CT) scan of pelvis was done which showed a neoplastic left ovarian mass with surface deposits over the right ovary, peritoneal thickening and ascites [Table/Fig-1]. A diagnostic laparoscopy was done. There was evidence of 1 L turbid ascitic fluid which was aspirated and sent for cytology and culture. No atypical/malignant cells were seen in the ascitic fluid. There was evidence of a ruptured large left ovarian cyst 10×10 cm. Both left ovarian cyst and right ovary were stuck in the pouch of Douglas. A provisional diagnosis of left ovarian tumour was made, primary or metastatic. Emergency decision for laprotomy was taken and Minilap was performed. Left salpingo-ovariotomy was done after adhesiolysis followed by peritoneal lavage. Rest of peritoneal surface was free of lesions except some flakes. Abdomen was closed and specimen of left salpingo-ovariotomy was sent to the Department of Pathology for histopathology.



[Table/Fig-1]: CT scan of pelvis showing a neoplastic left ovarian mass with surface deposits over the right ovary, peritoneal thickening and ascitis.

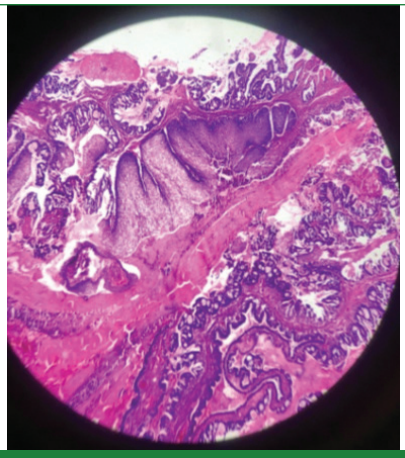
Grossly, the cystic specimen measured 9×5×4 cm with attached fallopian tube measuring 6 cm in length. Outer wall of cyst was smooth. Cyst wall had a rupture measuring 7 cm in length. On cut section, inner cyst wall showed solid areas ranging in size from 5.5×4 cm to 2×1 cm. Cyst was filled with mucin [Table/Fig-2].



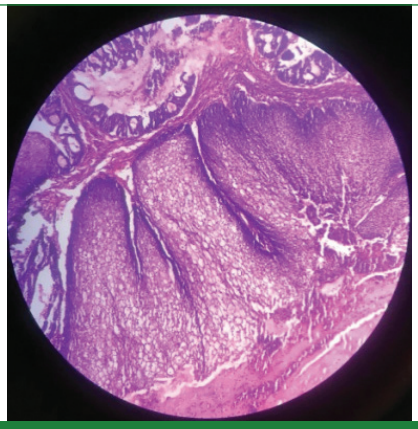
[Table/Fig-2]: Gross image of cut section of left ovarian mass, showing cyst 9×5×4 cm with solid areas on inner cyst wall.

Microscopically, the cyst wall comprised of fibrocollagenous tissue lined by stratified squamous epithelium. At places, the wall enclosed malignant mucin producing glands, showing a focal cribriform appearance and at places exhibiting an adenocystic pattern. The glands were lined by cells with hyperchromatic nuclei, showing moderate mitotic activity. Extracellular mucin was observed within and outside the glands [Table/Fig-3-6]. A histopathological diagnosis of mucinous adenocarcinoma arising in a MCT was made.

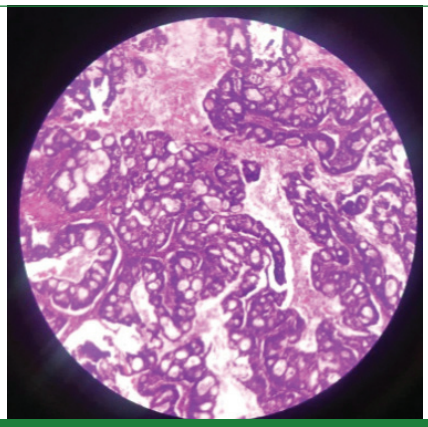
Skeletal survey was done to rule out metastasis. Colonoscopy and upper endoscopy were done to exclude metastasis to the ovary from a gastrointestinal mucinous adenocarcinoma. The patient was referred to Oncology Department for adjuvant chemotherapy, but she refused chemotherapy. Patient has been asked to follow-up every three months for pelvic examination, vaginal cytology and abdomino-pelvic CT.



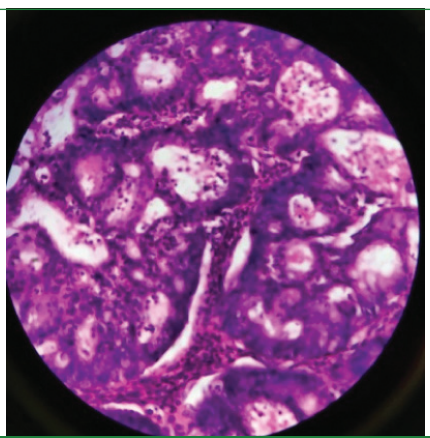
[Table/Fig-3]: Microphotograph H&E(x40) showing cyst wall comprising of fibrocollagenous tissue lined by stratified squamous epithelium, at places showing malignant mucin producing glands.



[Table/Fig-4]: Microphotograph H&E(x100) showing cyst wall comprising of fibrocollagenous tissue lined by stratified squamous epithelium, at places showing malignant mucin producing glands.



[Table/Fig-5]: Microphotograph H&E(x100) showing malignant mucin producing glands, with focal cribriform appearance and at places adenoid cystic pattern.



[Table/Fig-6]: Microphotograph H&E(x400) showing malignant mucin producing glands, lined by cells with hyperchromatic nuclei exhibiting moderate mitotic activity.

DISCUSSION

The MCTs makeup almost 20% of all ovarian neoplasms. They constitute the most common ovarian tumour in childhood [1]. In 10-17% of patients, MCTs occur bilaterally. Patients with MCT's are mostly asymptomatic,but some present with pain and a sensation of abdominal fullness. Two theories have been suggested for the origin of MCT's: 1) arising either from germ cells by failure of meiosis II 2) or from premitotic cell in which meiosis I has failed [2]. Data regarding malignancy associated with MCT's suggest that it occurs in 1-2 percent cases [3]. The most common form of malignancy associated with MCT's is squamous cell carcinoma, which occurs in 75% of cases, while adenocarcinoma arising from MCT's is rare, with an incidence of 7% [3]. Other types include malignant melanoma, Paget's disease, sarcomas of various types, carcinosarcoma, glioblastoma multiforme, central type neurocytoma and neuroblastoma/Primitive Neuroectodermal Tumour (PNET) [1].

The mechanism of malignancy associated with ovarian MCT's is uncertain. MCTs are usually detected 15-20 years before the malignant transformation. Therefore, one theory suggests that the malignant transformation is triggered by prolonged exposure of the MCT to carcinogens in the pelvic cavity [4]. Factors which are predictive of malignant transformation of MCTs include old age, large tumour size, raised CA 125, postmenopausal status and presence of solid components [5]. However, 80% of malignant transformations have been reported in women of reproductive age [6]. Cytokeratin (CK) 7/CK 20 helps to distinguish primary ovarian mucinous tumours from metastasis of lower intestinal tract origin. The former exhibits diffuse expression of CK 20 with lack of or limited CK 7 expression. On the other hand, primary gastrointestinal tract mucinous tumours, secondarily involving the ovaries exhibit diffuse expression of CK 7 with variable expression of CK 20, usually present, but patchy rather than diffuse [7].

Optimal surgical cytoreduction is useful in metastatic disease, although the mainstay of treatment in malignancy confined to the ovary is surgical resection and complete staging. During surgery, care should be taken to prevent rupture of MCTs and resultant tumour spillage [8].

In case of tumours confined to the ovary, patients are managed by observation alone, but in advanced cases or cases with tumour spillage, adjuvant therapy has been given. One regimen which has been tried includes platinum and 5FU-based treatments. Targeted therapies against epidermal growth factor receptor could also be effective, since Kirsten rat sarcoma viral oncogene (KRAS) mutations have been detected in some of these cancers [9].

Tumour dissemination, cyst wall invasion, ascites, spontaneous or accidental rupture and adhesion all favour a poor prognosis [7].

Chemotherapy is much less effective in an advanced carcinoma associated with MCT than in an epithelial ovarian carcinoma. The two year survival rate of patients with Stage II-IV tumours is 0 to 30%, but the prognosis for patients with Stage I MCT associated with malignancy is good [10].

Malignancy associated with MCT of ovary is rarely diagnosed or even suspected preoperatively. This is because the presenting symptoms in such patients, as well as the imaging pictures are not specific. Therefore histopathological examination of the resected ovary is the mainstay for diagnosis [11].

CONCLUSION(S)

Malignancy associated with a MCT is rare, occurring in 1-2% cases, and adenocarcinoma is extremely rare. It presents a diagnostic dilemma, since the clinical features and imaging pictures are not specific. This makes it difficult to distinguish malignant change from a benign tumour. Histopathological examination of the resected ovary is the mainstay for diagnosis. Hence the patient should be informed that a prompt second staging operation will be performed if histopathological examination reveals an unexpected malignancy.

REFERENCES

[1] Goldblum JR, Lamps LW, McKenncy JK, Myers JL. Rosai and Ackerman's surgical pathology vol 2. 11th edition. Elsevier; 1397-1399.

[2] Maeda K, Terai Y, Terada S, Maruoka H, Kogata Y, Ashihara K, et al. A case of ovarian clear cell carcinoma arising from ovarian mature cystic teratoma. Journal of Ovarian Research. 2018;11:74.

[3] Takai M, Kanemura M, Kawaguchi H, Fujiwara S, Yoo S, Tanaka Y et al. Mucinous adenocarcinoma of intestinal type arising from mature cystic teratoma of the ovary: a rare case report and review of literature. J. Ovarian Res. 2012;5:41.

[4] Rim SY, Kim SM, and Choi HS. Malignant transformation of ovarian mature cystic teratoma. Int J Gynecol Cancer.2006;16(1):140-44.

[5] Sunitha S, Arundhati S, Betigeri AM, Adenocarcinoma of intestinal type arising in mature cystic teratoma of ovary in a young female: An incidental finding. Indian J Pathol Oncol. 2017;4(2):336-38.

[6] Park CH, Jung MH, Ji YI. Risk factors for malignant transformation of mature cystic teratoma. Obstet Gynecol Sci. 2015;58(6):475.

[7] Park JH, Whang SO, Song ES, Choi SJ, Lee WY. An ovarian mucinous cystadenocarcinoma arising from mature cystic teratoma with para-aortic lymph node metastasis: A case report. J Gynecol Oncol. 2008;19(4):275-78.

[8] Sakuma M, Otsuki T, Yoshinaga K, Utsunomiya H, Nagase S, Takano T, et al. Malignant transformation arising from mature cystic teratoma of ovary: A retrospective study of 20 cases. Int J Gynecol Cancer. 2010; 20(5):766-71.

[9] Li Y, Zhang Y, Pan D, Huang B, Weng M, Nie X. KRAS mutation in adenocarcinoma of gastrointestinal type arising from a mature cystic teratoma of the ovary. J Ovarian Res. 2014;7(1):85.

[10] Miyasaka A, Nishikawa T, Kozawa E, Yasuda M, Fujiwara K, Hasegawa K. Advanced mucinous adenocarcinoma arising from a mature cystic teratoma: A case report and literature review. Case Rep Oncol. 2016;9(2):331-37.

[11] Imtinene B, Wiem K, BA Atef, B Ahlem, E Faten, C Imene et al. Adenocarcinoma of intestinal type arising in mature cystic teratoma of ovary: A diagnostic dilemma. Clin Case Rep. 2020;8(4): 644-47.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Lecturer, Department of Pathology, Goa Medical College, Panaji, Goa, India.
2. Associate Professor, Department of Pathology, Goa Medical College, Panaji, Goa, India.
3. Professor and Head, Department of Pathology, Goa Medical College, Panaji, Goa, India.
4. Postgraduate Student, Department of Pathology, Goa Medical College, Panaji, Goa, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

V Marisa DSouza,
34, La Oceana Colony, Phase-2, Taleigao Plateau, Dona Paula, Goa, Panaji, India.
E-mail: marissarebello@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: May 22, 2020
- Manual Googling: Jul 24, 2020
- iThenticate Software: Oct 16, 2020 (23%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **May 21, 2020**
Date of Peer Review: **Jul 08, 2020**
Date of Acceptance: **Jul 29, 2020**
Date of Publishing: **Jan 01, 2021**