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Case Report-Unilateral Ovarian Metastatic Mucinous Cystadeno Carcinoma

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Abstract
Malignant epithelial ovarian tumours are most common in the adult age groups and rare in the childhood. Here with a case of mucinous cystadeno carcinoma of right ovary in a 31 year old lady presented with complaints of abdominal distension, following a disease free interval of 5 years from a colorectal adenocarcinoma is being described. The immunohistochemistry showed CK 20 positivity.
Keywords: *Unilateral Ovarian tumors, mucinous tumors of ovary, ovarian cyst, CK 20 positivity.*

Introduction

Ovarian cancer is the third most common gynecological malignancy and one of the leading causes of death in gynecological cancers globally. It account for 4 % of deaths globally in 2010[3]. Apart from the primary tumor of ovary it's as also said that most common site for metastasis[4]; metastasis can range from 5-30 % cases for ovarian metastasis[4]. More than 90% of ovarian carcinomas are of epithelial origin with 4 main subtypes including serous, mucinous, endometrioid and clear cell carcinoma. The causes of ovarian cancer is still not fully understood but many risk factors are associated with the changes of sex hormones during a women's life time has been reported. Estrogen is one of the main sex hormone which has shown its effect on ovarian cell proliferation and also been reported that women who undertake hormone replacement therapy during menopause with estrogen for 10 years or longer have increased risk of developing ovarian cancer by exposure of ovarian surface epithelium to estrogen. ER and PR facilitate the effect of estrogen and progesterone on proliferation and apoptosis of ovarian cancer cells. But using hormone as the treatment for ovarian cancer has not yet been recommended. Ovarian cancer usually has a relatively poor prognosis due to late diagnosis in most cases, where the tumor cells have already metastasized to the peritoneal cavity at the time of diagnosis. There is no clear clinical prognostic marker in ovarian cancer. The association of ER or RP positivity present better clinical outcomes including survival rate and longevity has recently been well documented in ovarian cancer in relation to the cancer subtypes.

However the underlying mechanisms are unknown. The ER and PR expression is variable between the epithelial ovarian cancers of different histological types.

Mucinous carcinoma account for 10% of all the ovarian tumors[5]. It is not that much difficult to differentiate the mucinous ovarian tumours from other histological subtypes[5]; however it is a really challenging one when differentiating the bilateral primary ovarian mucinous cyst adenocarcinoma from metastatic deposits, Kurukenberg, especially from the colonic origin[5]. Colonic adenocarcinoma deposits can mimic as a primary ovarian carcinomas and it may be difficult to recognize this entity where immunohistochemistry may be of use.

Clinical History

31 year old female presented with the complaints of abdominal distension and discomfort for past 6 months duration. The symptoms are progressive in nature along with loss of weight and appetite. There was a previous history of surgery for a colorectal carcinoma, the nature of which is not clear due to the non-availability of documents. That incidence happened 5 years back.

Macroscopy

Container had a single grey white and grey brown cystic soft tissue mass measuring 18x16x10cm, identified as ovary because of the attachment of the fallopian tube which measured 9x1cm. On cut section of the soft tissue mass solid as well as multiple cystic areas were identified. Solid area measured 10x8cm; largest cyst measured 3x2.5cm and smallest cyst was 0.5cm in diameter. Gelatinous materialwere expelled out from the cyst. The cyst wall was of uneven in thickness.

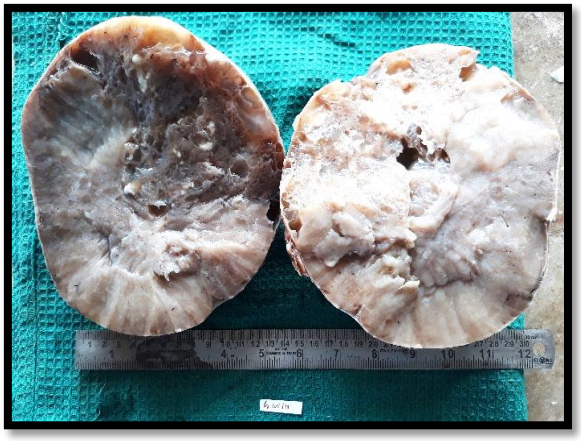

Figure 1: Grey white Grey brown cystic soft tissue mass

Microscopy

Multiple bits were taken and the slides were studied extensively and the following observation were made. Sections revealed ovarian tissue with multiple cystically dilated glandular structures lined by columnar cells engorged with mucin. Some of the glands were enormously dilated and filled with mucinous material where signet ring cells, (the cells engorged with mucin where the nucleus were pushed to the periphery of the cell membrane) seen floating in lake of mucin along with well differentiated glandular structure. There was focal proliferation of the cells present. However in most of the areas nuclei appearance to be very bland. With the above features the diagnosis of a well differentiated mucinous adenocarcinoma was made. Other possibility, namely, unilateral Krukenberg tumour also was considered. Immunohistochemistry was carried out.

The left side was received separately which reveled corpus albicans set against the background of ovarian stroma.

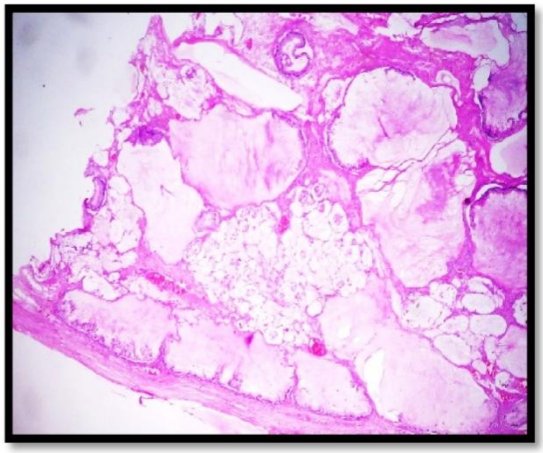

Figure 2: 10 x- Cystically dilated glands lined by columnar cells filled with mucin.

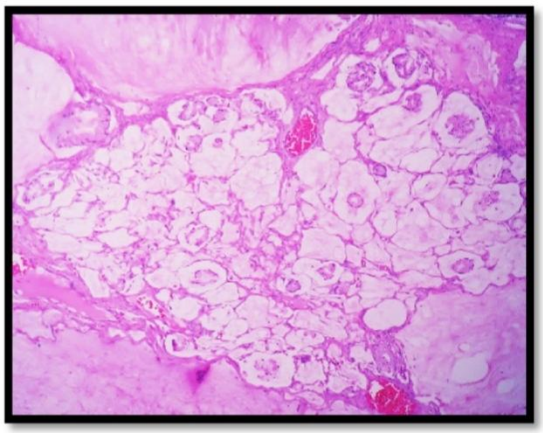

Figure 3: 40 x -Signet ring cells seen floating in the lake of mucin.

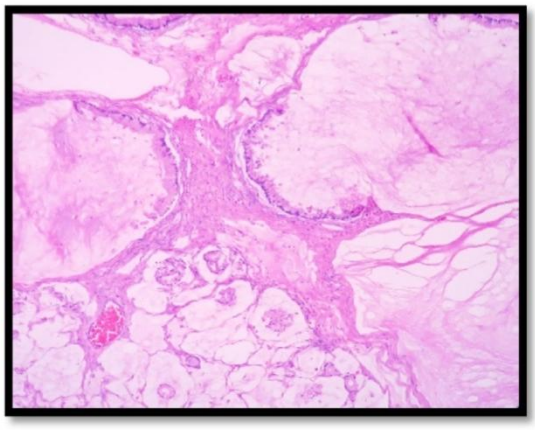

Figure 4: 40 x -Cyst lined by columnar cells and signet ring cells floating in the lake of mucin.

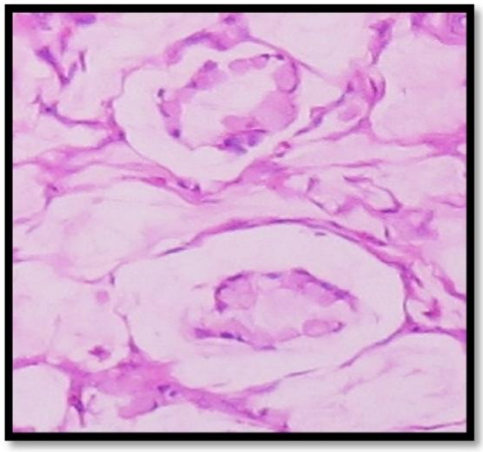

Figure 5: 40 x – signet ring cell

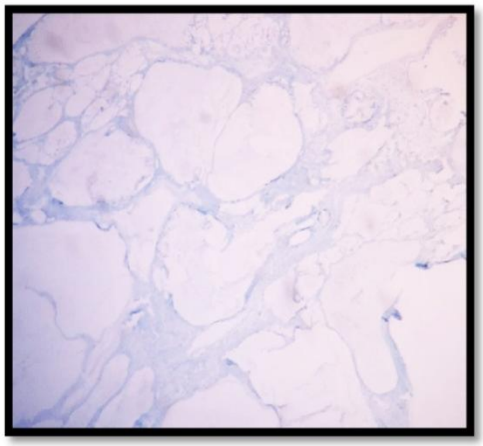

Figure 6: 10 x show cytokeratin 7 negativity.

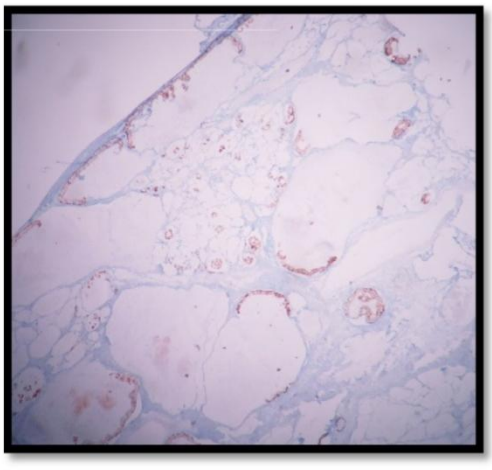

Figure 7: 10 x show cytokeratin 20 positivity.

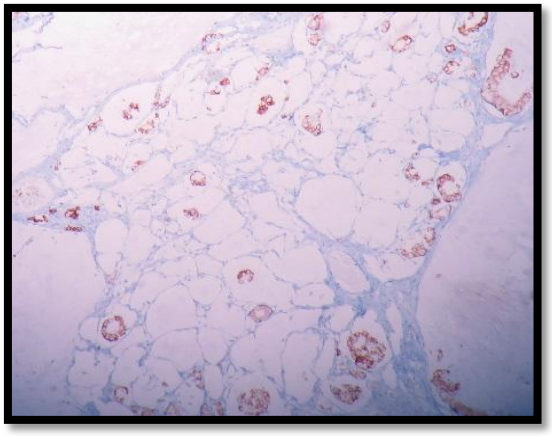

Figure 8: 40 x show cytokeratin 20 positivity

Discussion

Ovarian mucinous neoplasms divided into benign, borderline, noninvasive and invasive carcinomas. Mucinous tumours of the ovary can harbor benign, borderline and malignant areas in the same sample; further well differentiated adenocarcinoma needs a careful study[1]. Mucinous cyst adenoma accounts approximately 10 to 15 %. Borderline and low malignant potential tumours are more common than primary invasive tumours of ovary which accounts forup to 67 % of mucinous neoplasms that are not considered strictly benign[1]. The clinical presentation of the most of the mucinous ovarian neoplasm inspite of the malignant potential are distinct from their other epithelial counterparts[1]. Primary mucinous ovarian tumours have some specific characters. These includes rate of bilaterality, symptoms at presentation, stage at diagnosis, potential for lymphatic dissemination, tumour markers expression in the serum[1].Mucinous cystadenomas of the ovary usually present as a large, multi loculated cystic mass which containing mucous material. The mean size at presentation is 18cm in size. The size and laterality of the tumour express the origin of the tumor either primary or metastatic origin. In case of primary ovarian origin the tumour are large in size and unilateral in presentation[1]. 4% of Serous ovarian tumours stage I at the time of diagnosis but mucinous ovarian tumours are 83% stage I at the time of presentation[1]. And grossly the mucinous tumours are limited to ovary itself. Carcino embryonic antigen is the one of the important serum marker which elevated in one third of the ovarian neoplasm and more likely elevated in the mucinous tumours of the ovary approximately in 88% of the cases[1].

WHO have given specific criteria for the diagnosis of intestinal type of mucinous borderline tumor. They includes cystic spaces lined by gastrointestinal-type mucinous epithelium with stratification and may form filiform papillae with at least minimal stromal support; nuclei are slightly larger than those seen in cystadenomas; mitotic activity is present; goblet cells and sometimes Paneth cells are present, but stromal invasion is absent[1]. Invasive mucinous carcinoma diagnosed by the presence of the stromal invasion measuring more than 5 mm.

There is difficulty in determining the primary mucinous ovarian tumors from the metastatic tumours from the other sites. The most common metastatic origin for mucinous ovarian tumours are gastrointestinal, pancreas, cervix, breast, and uterus. Some histological features are favour in primary mucinous carcinoma of ovary over metastatic origin. Metastatic origin are supported by the following features like prominent desmoplastic response, nodular pattern of invasion, small clusters of tumor cells within corpora lutea or albicantia, numerous pools of mucin dissecting the ovarian stroma (i.e., pseudomyxoma ovarii) without a coexistent ovarian teratoma, extensive signet-ring cell pattern, ovarian surface involvement, vascular invasion, hilar involvement, and an extensive infiltrative pattern of invasion[1.]

However the histology pattern alone cannot be confirmative without the adequate clinical knowledge and immunohistochemical studies.

The Immunohistochemistry is useful for differentiating the primary mucinous ovarian tumour from metastatic origin. Primary mucinous ovarian carcinomas express positivity for CK7 & CK 20 whereas metastatic mucinous tumours especially colorectal primary tumours express

only CK 20 positivity[9]. It also expressracemase and β-catenin but primary mucinous ovarian carcinomas do not express it. Endocervical primary mucinous metastatic tumour conformed by the In situ hybridization for HPV. Estrogen and progesterone receptors are not helpful in the distinguish between the primary mucinous ovarian tumour from the metastatic mucinous tumour of ovary Because the both condition shows negativity for progesterone receptor and variable expression in estrogen receptor[1]. Pancreatic primary metastatic mucinous tumour conformed by the presence of mesothelin, fascin, and prostate stem cell antigen. Dpc4 positivity expression indicates primary mucinous ovarian carcinomas. Metastasis from the breast can be confirmed by the positive expression for CK7 only rather CK7 & CK 20 positive expression in the primary mucinous ovarian tumours. Also breast metastatic origin are express positivity for estrogen receptors and gross cystic disease fluid protein (GCDFP)-15, but mucinous ovarian primaries will not express it.

The final diagnosis has a bearing in the treatment modalities. In standard practice the treatment protocol is mainly based on the primary site of the tumour not by the histological subtypes. For example the treatment protocol for mucinous cystadenocarcinoma of the colon is 5-Fluorouracilwhereas treatment for ovarian cancers is Paclitaxel and Platinum based therapies[6, 7]. Therefore the differentiation between the primary ovarian cancers from the metastatic tumour is necessary for the patient's management.

Conclusion

Mucinous ovarian carcinomas present a distinct histological entity. Significantly they differ from the other epithelial tumours of ovary in their pathogenesis, pathologic characteristics, molecular signature, and clinical behavior. Saying the accurate location of the primary mucinous ovarian carcinomas are absolutely difficult one. So it is highly recommended to the patient has to undergo colonoscopy examination at the time of presentation even though the patient does not have any gastrointestinal symptomes[1]. The tumour size and the presence of the laterality and immunohistochemical markers study of the tumour and colonoscopy examination of the patient may alter the treatment regimens significantly.

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