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Synchronous Tumor of Colon Co-existing with a Collision Tumor of Ovary: An Unusually Rare Combination and a Diagnostic Challenge

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Abstract

Introduction: Multiple primary tumors identified pre-operatively, intraoperatively or a second tumor diagnosed within 6 months of resection of primary tumor is termed as synchronous tumor. Collision tumors are rare neoplasms in which two distinct tumors co-exists together in the same organ but are histologically different with no histological intermixing. We are presenting a case report of a very rare combination of synchronous adenocarcinoma of colon coexisting with a collision ovarian tumour i.e. fibroma with serous cystadenoma. To the best of our knowledge, there are no reported cases of synchronous tumor of colon with collision tumor of ovary reported in literature by far.

Case Report: A 60 years oldwoman presented with left sided abdominal mass with altered bowel habits and bleeding per rectum. Computed tomography (CT) scan showed a densely adhered solid cystic mass in the left ovary with a colonic mass. A clinical diagnosis of colon carcinoma with metastasis to left ovary or vice versa was made. On histopathological examination, final diagnosis of fibroma and serous cystadenoma of left ovary with adenocarcinoma colon was made.

Conclusion: We hope that this case helps to increase surgeon's awareness of the adnexal masses they may come across during surgery.

Keywords: Synchronous tumor, collision tumor, colon carcinoma, fibroma, serous cystadenoma

Introduction

Multiple carcinomas can often occur in colon at the same time; they are termed synchronous tumors when two or more primary carcinomas coexist at the time of diagnosis or a second tumor is diagnosed within six months after initial diagnosis. However, they are called metachronous tumors if they are diagnosed after more than 6 months (1).

Collision tumors are defined as an entity in which two distinct tumors exists together in the same organ but are histologically different from one another and there is no histological intermixing (2,3).Each component is separated from the other, either by the stroma or the tumour's basal lamina and each should be considered as a distinct tumor. The Collision tumors have been encountered in several

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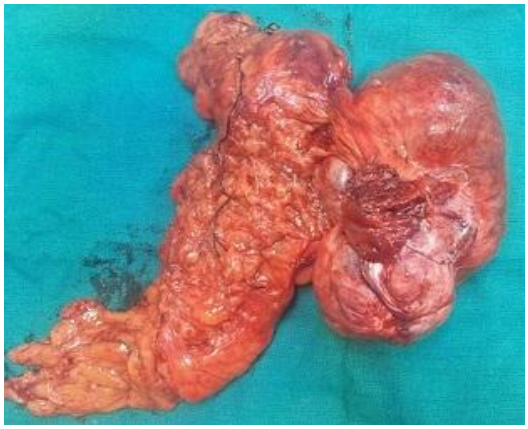

Figure 1: Ovarian mass

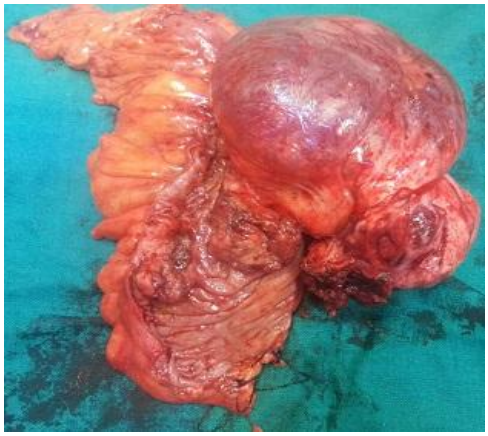

Figure 2: Ovarian mass with colonic mass

organs like lungs, adrenals, skin, and gastrointestinal system (4). They are rarely reported in ovaries and most commonly consist of cystadenoma or cystadenocarcinoma with teratoma(4, 5).

We report a case of a very rare combination of synchronous colon tumor with a collision tumor of ovary, i.e. adenocarcinoma of colon along with fibroma and serous cystadenoma of ovary. To the best of our knowledge, there are no reported cases of such a combination tumors reported so far in the literature.

Case presentation

A 60 years old post-menopausal woman presented with left sided lower abdominal mass with altered bowel habits and weight loss since the last 4 to 6 weeks. Contrast enhanced computed tomography (CECT) scan showed a densely adhered solid cystic lesion in the left ovary with a colonic mass. On colonoscopy, an ulcero-proliferative growth involving the sigmoid colon was observed. Clinical diagnosis of colon carcinoma with metastasis to left ovary or vice versa was made as the colonic mass and solid cystic ovarian mass were densely adhered and were not appreciated distinctly. Biopsy from the conglomerated mass showed a villous tumor with areas of necrosis and focal areas of invasion; suggestive of papillary adenocarcinoma. However, the origin of the tumor could not be identified.

Anterior resection and bilateral oophorectomy were done. A cystic lesion with solid component arising from the ovary was excised. The mass was adhered to the lateral pelvic wall. A circumferential growth in sigmoid colon which appeared separate from the ovarian lesion was also excised. Mesenteric lymph nodes were enlarged and no peritoneal or liver metastasis was noted. The specimen was submitted for histopathological examination.

On gross examination, the sigmoid colon with attached left ovarian mass measured 25 x 15 x 7 cm. An ulcero-proliferative polypoidal grey white growth (5 x 3.5 x 2 cm) was identified in the lumen of the sigmoid colon, which was firm in consistency. The left ovary measured 17 x 10 x 7 cm and had smooth and grey white outer surface. Cut surface showed solid as well as cystic areas; the solid measured 7 x 6 x 5 cm. It was firm to hard in consistency and grey white in color. A uniloculated cyst measuring 10 x 9 x 5 cm was noted merging with the solid areas. The cyst had thin, smooth walls without any papillary excrescences and was filled with clear fluid (Figures 1 & 2).

Sections from the polypoidal growth in the colon showed an invasive tumor composed of irregular, confluent and fused glands lined by large pleomorphic cells with enlarged hyperchromatic nucleus, high nuclear to cytoplasmic ratio, coarse chromatin, prominent nucleoli and moderate amount of cytoplasm. Large pools of extracellular mucin as well as

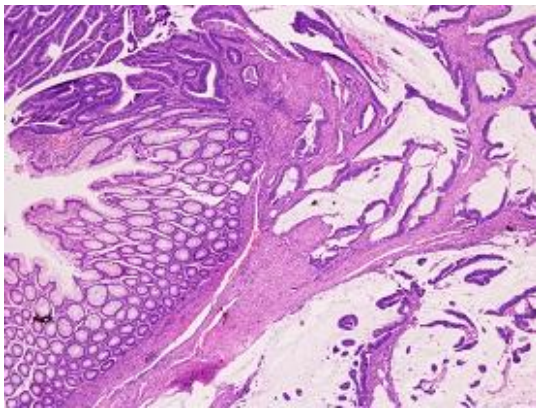

Figure 3: Colonic adenocarcinoma with mucinous component (H&E, 100x)

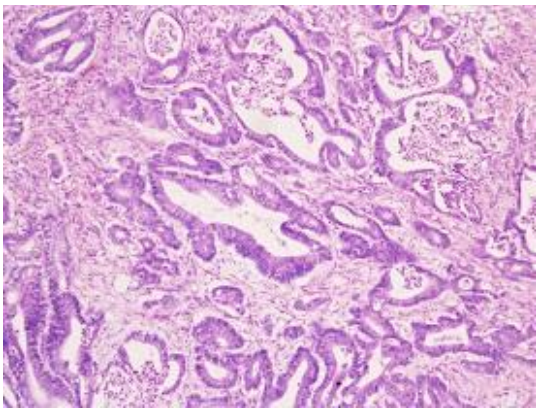

Figure 4: Colonic adenocarcinoma (H&E, 400x)

numerous signet ring cells were also noticed (Figures 3, 4& 5). An increased mitotic along with lymphovascular and perineural invasion were found. Of 19 lymph nodes isolated, 11 showed metastatic tumor deposits.

Sections from the solid part of the left ovary showed tumor composed of sheets and fascicles of bland spindle cells admixed with collagen. These cells have scanty cytoplasm and uniform oval nuclei without atypia and mitosis (Figure. 6). Sections from the cystic part of the ovary show a thin fibrocollagenous cyst wall lined by single layer of columnar epithelium cells resembling tubal epithelium which rests upon fibrocollagenous connective tissue. No atypia was noted (Figure 7). Liningepithelium was also seen in the interface between solid and cystic area. The fibroma and serous cystadenoma of the ovary were noted co-existing in close proximity with one colliding into the other (Figure 8).

Final diagnosis of high grade adenocarcinomaof colon (Signet ring cell component - 35%, Mucinous component - 20%) with ovarian fibroma and benign serous cystadenoma of left ovary was made. Immunohistochemistry microsatellite instability (MSI) panel was negative in this case.

Discussion

Synchronous tumors are characterised by presence of two or more primary carcinoma coexisting at the time of diagnosis. These tumors are generally detected during pre-operative screening, intraoperatively or in a 6 month period postoperatively. If diagnosed more than six months after primary diagnosis, they are then termed metachronous tumor. The tumors should be at least 3 cm apart and should not consist of submucosal spread or satellite lesion of each other (6-8). Synchronous tumors are caused by genetic and environmental factors working in tandem. These include familial adenomatous polyposis, inflammatory bowel disease including both ulcerative colitis and Crohn's disease, hereditary non-polyposis colorectal cancer and serrated and hyperplastic polyps (7, 9).

Synchronous carcinomas are observed in about 20% of patients presenting with colorectal carcinomas. They are associated with poorer prognosis as compared to metachronous tumors; approximately every second patient without metastases during presentation, develops metastases within 3 years of diagnosis (8).A male preponderance has been noted with a male to female ratio of 1.8:1 and the mean age of presentation is at seventh decade of life (9). Approximately 15% of metastases found in synchronous colorectal carcinomas occur in the liver. Metastasis to the liver is associated with poorer prognosis with less than 5% survival at the end of 5 years (10).

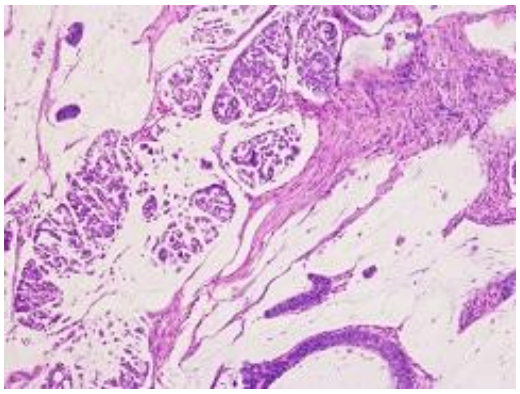

Figure 5: Colonic adenocarcinoma with signet ring cell component (H&E, 100x)

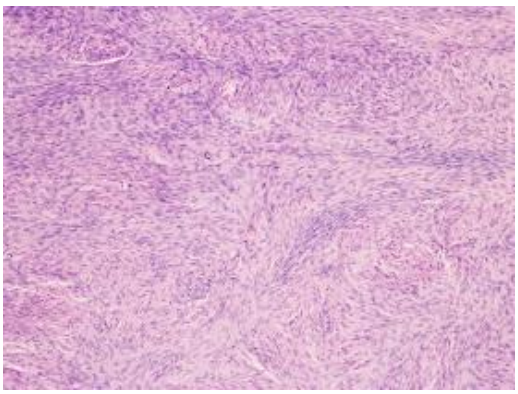

Figure 6: Ovarian fibroma composed of sheets & fascicle of spindle cells (H&E, 100x)

Synchronous tumors are not just limited to the colon; they have been detected across the whole gastro intestinal system and outside of it. According to a study published in Korea, they found gastric synchronous tumors associated with tumors in head & neck, esophagus, lungs and kidneys with a male preponderance. They also concur with the study conducted by Mekenkamp *et al.,* that synchronous tumors carry a worse prognosis as compared to metachronous tumor (8, 11). Synchronous tumors of lungs, oropharynx, colon and prostate were reported in a report by Testori *et al.,* (12).

Collision tumors are rare neoplasms and their occurrence in ovary is rarer (2, 3, 5). Collision tumors in ovary most commonly noticed are benign mature teratoma with an ovarian cystadenoma or cystadenocarcinoma. Serous cystadenoma represents 20% of ovarian collision tumors (5). Few studies have been conducted which showed existence of collision tumours in the ovary. A study by Chandanwale *et al.*, described a combination of serous cystadenoma with fibrothecoma. The authors emphasised on the need to distinguish fibrothecoma with massive cystic changes from serous cystadenoma. Ciliated cuboidal lining epithelium of the cyst wall rules out cystic changes in fibrothecoma and absence of glandular structures rules out cystadenofibroma (13). A combination of endometrioid adenocarcinoma and a teratoma was described by Ahmed *et al* .,(14).Thilankarathne *et al.*, found an ovarian collision tumour composed of serous cystadenoma with a fibroma in a postmenopausal woman. The conundrum faced was distinguishing single tumor with a solid

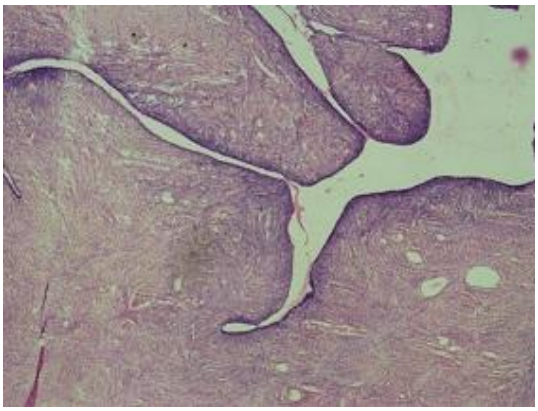

Figure 7: Serous cystadenoma showing single layer of columnar epithelial cells (H&E, 100x)

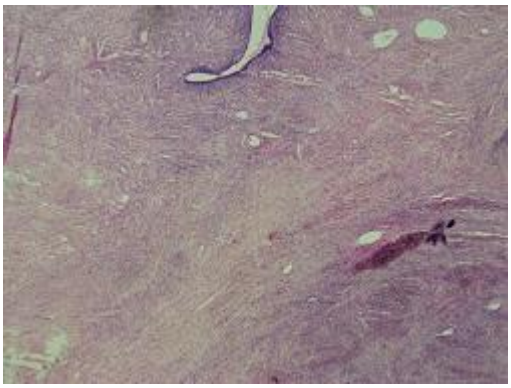

Figure 8: Collision tumor showing fibroma co-exiting with serous cystadenoma (H&E, 100x)

and cystic component from a collision tumor composed of two different tumors, one solid and the other cystic (15). A study published in 2005 by Studzinski *et al*., found co-existence of second primary malignancy in 14.3% of cases(16).

An adenocarcinoma of colon occurring with serous cystadenoma and fibroma of ovary is highly unusual and very rare combination. The collision tumor of ovary however benign but appeared malignant clinically and on imaging due to presence of solid and cystic components coexisting with colon carcinoma further adds to the diagnostic dilemma and makes it quite challenging. Extensive sampling should be done to exclude other possibilities. Awareness of this combination may help in avoiding misdiagnosis and mismanagement.

It is important that the gastro-intestinal surgeons should be aware of signs that may be an indicator of gynaecological malignancies presence, especially in centres like ours where a gynaecological surgeon is not present. Masses in the ovary like multi-cystic lesions, masses with solid and cystic features or solid masses with or without ascites should warn the surgeon for the presence of an ovarian malignancy. Also, it is worth mentioning that presence of ovarian or endometrial carcinoma increases the chances of carcinoma of colon and breast development and vice versa (16).

Conclusion

Synchronous as well as collision tumors presents as a diagnostic challenge, both for the surgeons as well as for the pathologists, correct identification of which can change the course of treatment and the outcome for the patient. We hope that this case helps to increase awareness of colorectal surgeons as well of pathologists regarding the adnexal masses they may come across, particularly epithelial masses, as well as the standards for surgical staging and optimal tumor resection for the various types of masses.

Learning points

Increased suspicion of presence of synchronous or collision tumors with increased awareness of the surgeon during procedure will help in avoiding misdiagnosis of such tumors.

Competing interests and conflict of interests

The authors declare no competing interests or conflict of interest.

Authors' contributions

MB: Contributed to the final diagnosis and edited the final manuscript
LK: Literature search and drafting the manuscript
PD: Helped in drafting the manuscript
SCS: Treated patient and provided clinical details

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Nil

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