

Primary signet ring cell carcinoma of the appendix: A rare case report

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Abstract

Primary adenocarcinoma of the appendix is a rare malignancy that constitutes < 0.5% of all gastroin-

testinal neoplasms. Moreover, primary signet ring cell carcinoma of the appendix is an exceedingly rare entity. In the present report, we describe a rare case of primary signet ring cell carcinoma of the appendix with ovarian metastases and unresectable peritoneal dissemination occurring in a 45-year-old female patient. She was clinically misdiagnosed as torsion of ovarian cyst. She underwent appendectomy and unilateral salpingo-oophorectomy. Histopathology revealed signet ring cell carcinoma and a right hemicolectomy was done. She then received palliative systemic chemotherapy with 12 cycles of oxaliplatin, 5-fluorouracil, and leucovorin (FOLFOX-4). The patient is doing well till today on follow up without progression of disease 10 mo after beginning chemotherapy.

Key words: Appendix; Primary; Signet ring cell carcinoma; Ovarian metastasis

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Core tip: Meticulous histopathological evaluation along with clinical correlation is strongly recommended in such unusual circumstances. The clinician and surgical pathologist should keep in mind this rare entity as a differential diagnosis.

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INTRODUCTION

Primary adenocarcinoma of the appendix, first invented in 1882, and constitutes 0.12 cases per one million



Figure 1 Showing twisted ovarian cyst.



Figure 2 Showing appendix.

people per year^[1]. Primary signet ring cell carcinoma is an extremely unusual event in surgical practice^[2]. Clinically it simulates acute appendicitis and difficult to distinguish from it^[3,4]. So, it is a difficult task to diagnose it on clinical grounds. Usually the diagnosis is confirmed on histopathology of a surgically-removed inflamed appendix^[5].

CASE REPORT

A 46-year-old female admitted in YCR Hospital Latur with persistent right lower quadrant abdominal pain. Baseline blood tests showed neutrophilic leukocytosis. Per abdominal examination revealed right abdominal distension. The patient was misdiagnosed as twisted ovarian cyst and emergency laparotomy was planned and performed. At laparotomy, the appendix appeared severely inflamed so the patient underwent an appendectomy and unilateral salphingo-oopherectomy. On gross examination, left large encapsulated, dark brown and smooth ovarian mass measuring 16 cm × 13 cm × 9.5 cm was found. The cut surface showed large hematoma with grey white visible areas. Attached fallopian tube measured 5 cm in length (Figure 1).

Appendix measured 6 cm in length. External surface was thickened and congested. Cut section showed obliterated lumen filled with gelatinous material (Figure 2). Microscopic examination of both left ovarian mass revealed signet ring cells showing an intracellular mucin to vacuolated cytoplasm shifting the nuclei towards periphery (Figure 3). Some extracellular mucin was

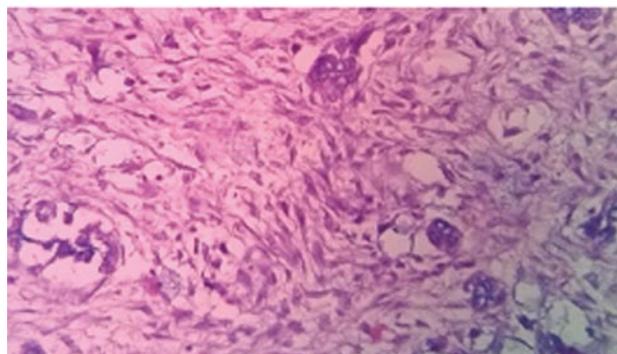


Figure 3 Signet ring cells in left ovary.

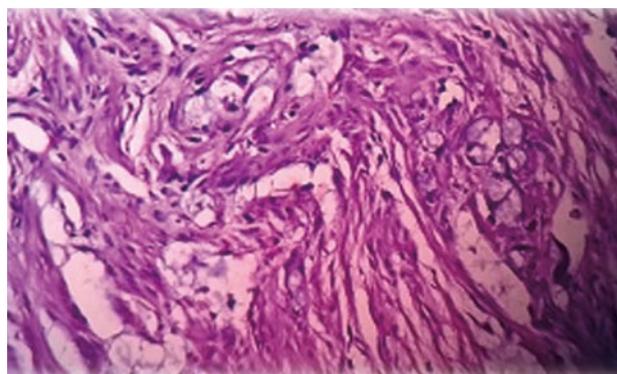


Figure 4 Showing signet ring cells in the appendix.

seen infiltrating the stroma. Large areas of hemorrhage and necrosis are noted. In appendix the signet ring cells and extracellular mucin was seen invading the mucosa, submucosa and muscularis propria (Figure 4). Thus the case was finally diagnosed as infiltrating adenocarcinoma of the appendix with "signet ring cells" differentiation, with signs of infiltration of peri-appendicular fat. The tumor cells were immunopositive for CEA, cytokeratin 20 (Figure 5), MUC2, and CDX-2 (Figure 6). The patient underwent colonoscopy for the evaluation of synchronous disease, which was negative. Later computed tomography (CT) scan was done and an 8 cm × 5 cm lesion in right adnexal region was noted so the patient subsequently underwent right hemicolectomy with total abdominal hysterectomy and unilateral salphingo-oopherectomy and no residual carcinoma with negative lymph nodes was found.

DISCUSSION

Appendiceal adenocarcinoma is an unusual malignancy^[1]. The reported prevalence rate is 0.3%^[6]. Signet ring carcinoma constitutes only 4% of all neoplasms of appendix^[2]. Malignant carcinoids are mainly found in younger age group (mean age, 38 years)^[1]. The mean age of occurrence of mucinous adenocarcinoma is 60 years, while that of signet ring cell carcinoma is 62 years with male: female ratio 1:1^[1].

According to International Classification of Diseases

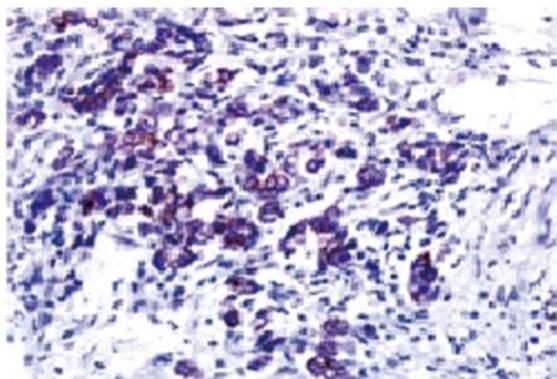


Figure 5 CK20 positive tumor cells.

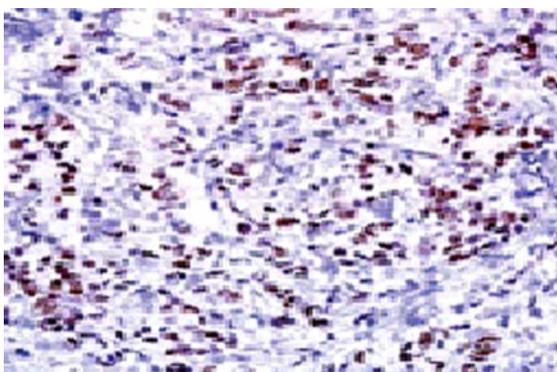


Figure 6 Presentations of CDX positivity by tumor cells.

for Oncology appendiceal tumors are divided in to five classes: Mucinous adenocarcinoma, colonic type adenocarcinoma, goblet cell carcinoma, signet ring cell carcinoma and malignant carcinoid/adenocarcinoid^[1,7]. Adenomas are the premalignant lesions^[8,9]. The signet ring cell carcinomas are usually frequent in the stomach and intestine. In our case, the tumor cells were immunopositive for cytokeratin 20, CDX-2, MUC-2, and CEA. The CDX-2 marker is the key to confirm the final diagnosis^[10].

Most of them are clinically low-grade tumors with indolent behavior. The overall 5-year survival rate is 20.5%. As per previous workers except for signet ring cell carcinoma and malignant characinoid, the histopathological variant does not affect the survival rate^[11]. In fact the extent of the disease at the time of diagnosis is an important determinant of prognosis of patient. As per previous studies, the prognosis of patients with diffuse, peritoneal metastases is worse, with a 5-year survival rate of 6.7%-14%^[12,13]. However, according to some workers signet ring cell carcinoma and poorly differentiated adenocarcinoma of the appendix had high propensity for development of metastasis with a 5-year survival rate of only 7%. So, signet ring cell carcinoma is considered as a separate tumor type in the appendix in view of its poor prognosis. Right hemicolectomy is the treatment of choice for all microscopic types of appendiceal carcinoma,

even in cases with perforation. In case of metastasis treatment modalities are systemic chemotherapy along with intraoperative intraperitoneal chemotherapy, peritonectomy and cytoreductive surgery^[1,5].

To conclude, meticulous histopathological examination of appendix is mandatory during exploratory laparotomy for ovarian masses and for diagnostic procedure. Exclusion of signet ring cell carcinoma from other carcinoma subtypes is of particular importance as it has an extremely poor prognosis and is usually diagnosed in advanced stages.

COMMENTS

Case characteristics

A 45-year-old woman presented to the Emergency Department of YCR Hospital Latur with persistent right lower quadrant abdominal pain.

Clinical diagnosis

Clinically diagnosed as twisted ovarian cyst.

Differential diagnosis

Twisted ovarian cyst was the clinical differential diagnosis and signet ring carcinoma of either colon, stomach or appendix were the histological differential diagnosis.

Laboratory diagnosis

Primary signet ring carcinoma of appendix with secondaries in the ovaries.

Imaging diagnosis

Computed tomography (CT) scan was done and an 8 cm × 5 cm lesion in right adnexal region was noted so the patient subsequently underwent right hemicolectomy with total abdominal hysterectomy and unilateral salpingo-oophorectomy.

Pathological diagnosis

Primary signet ring carcinoma of appendix with secondaries in the ovaries.

Treatment

Right hemicolectomy. She then received palliative systemic chemotherapy with 12 cycles of oxaliplatin, 5-fluorouracil, and leucovorin (FOLFOX-4). The patient is doing well till today on follow up without progression of disease 10 mo after beginning chemotherapy.

Experiences and lessons

Meticulous histopathological examination of appendix is mandatory during exploratory laparotomy for ovarian masses and for diagnostic procedure.

Peer-review

The authors have performed a good study, the manuscript is interesting.

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