Appendiceal metastasis in ovarian carcinoma-a case report

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ABSTRACT

Background: Being highly malignant, ovarian carcinoma mostly presents at an advanced stage at the time of diagnosis. The appendix could be a potential site for metastatic involvement by ovarian malignancy, however, this is a rare event. Though, its presence can upgrade the tumor to stage III.

Case Presentation: We report a post-menopausal patient with abdominal mass and distension. Computed tomography scan showed bilateral adnexal lesions, an enlarged enhancing appendix, right hydroureteronephrosis, and ascites. On histopathological correlation, the adnexal lesions turned out to be moderate to poorly differentiated papillary adenocarcinoma with omental and appendiceal involvement by the pathologic process. The patient was then referred to the Oncology department.

Conclusion: Clinical assessment of appendix or routine appendectomy as part of late-stage ovarian carcinoma management in older patients with omental involvement can lower the risk of appendiceal involvement with subsequent downstaging of the tumor.

Keywords: Ovarian carcinoma, appendiceal metastasis, appendectomy.

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Background

Ovarian cancer is one of the most lethal gynecologic cancers worldwide and is usually diagnosed at an advanced stage owing to non-specific symptoms and a lack of effective screening programs specifically in underdeveloped countries [1]. The liver is the most common site for distant metastasis followed by lungs, bone, brain, and distant lymph nodes. Distant metastatic sites serve as an independent risk factor for ovarian carcinoma prognosis with the worst overall survival being reported with pulmonary metastasis and the best overall survival with distant lymph node metastasis. The number of distant metastatic sites however does not have an impact on the overall survival of ovarian cancer patients [2]. Appendiceal metastasis is uncommon in ovarian cancer patients. A study conducted by Kokanali et al. [3] on 134 patients who had undergone the surgical procedure for ovarian carcinoma including appendectomy showed a prevalence of appendiceal metastasis in about 21 (15.7 %) patients. Keeping this in view and other factors including older age and omental involvement, clinical appendiceal assessment or appendectomy could be a part of routine staging procedures specifically to differentiate appendiceal metastasis from the second primary and to assist in tumor downgrading in case of metastasis to the appendix [4].

Case Presentation

A 57-year post-menopausal patient presented to our Oncologic Outpatient Department with the complaint of gradual onset of diffuse non-radiating lower abdominal pain of dull character associated with abdominal distension, weight loss, backache, and urinary incontinence for 3 months. Her past medical and family history was unremarkable. She has not received any medication yet. No history of smoking. No history of altered sensorium, palpitations, shortness of breath, or bone pain.

On physical examination, there was a palpable lower abdominal mass associated with abdominal distension. The respiratory, cardiovascular, neurological, and musculoskeletal examination was unremarkable.

The patient was advised of biochemical and radiological correlations. Her CA-125 was significantly raised (2541.9 U/ml) while her CEA was within normal limits (1.56 ng/ml).

Computed tomography (CT) scanning revealed a large enhancing solid mass lesion in the pelvis extending into

the lower abdomen; measuring about 13 × 8.3 × 11.4 cm (AP × TR × CC), likely to be of adnexal origin. There was mild right hydroureteronephrosis likely secondary to the mass effect of the aforementioned lesion (Figures 1-6).

In addition, the appendix appears to be enlarged and enhanced showing circumferential wall thickening and conforming to the shape of a mass lesion measuring 3.4 × 1.8 × 1.7 cm (CC × TR × AP). No tomographic evidence of peri-appendiceal fat stranding was noted, limiting the possibility of acute appendicitis. There were mild to moderate ascites as well (figure 4,5,6). CT findings suggested a primary ovarian malignancy with suspicion of appendiceal metastasis.

The patient subsequently underwent staging laparotomy, debulking surgery, and appendectomy.

Figure 1. *Coronal view of computed tomography scan of abdomen post contrast administration, showing a heterogeneously enhancin pelvic mass extending into lower abdomen, likely of adnexal origin. There is mild right hydroureteronephrosis and moderate ascites.*

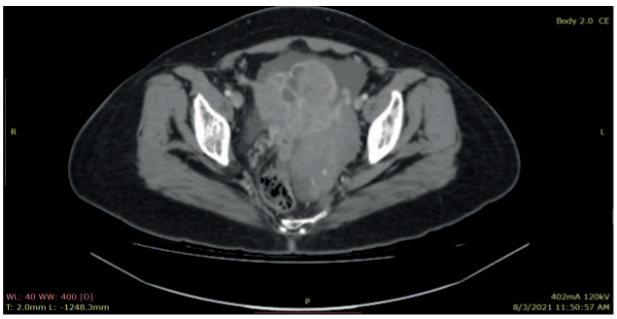

Figure 2. *Axial view of computed tomography scan of abdomen post contrast administration, showing a heterogeneously enhancin pelvic mass extending into lower abdomen, likely of adnexal origin. There is mild right hydroureteronephrosis and moderate ascites.*

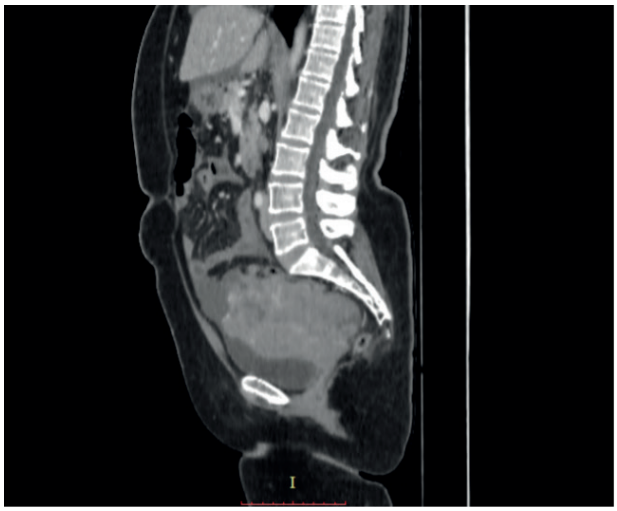

Figure 3. *Sagittal view of computed tomography scan of abdomen post contrast administration, showing a heterogeneously enhancin pelvic mass extending into lower abdomen, likely of adnexal origin. There is mild right hydroureteronephrosis and moderate ascites.*

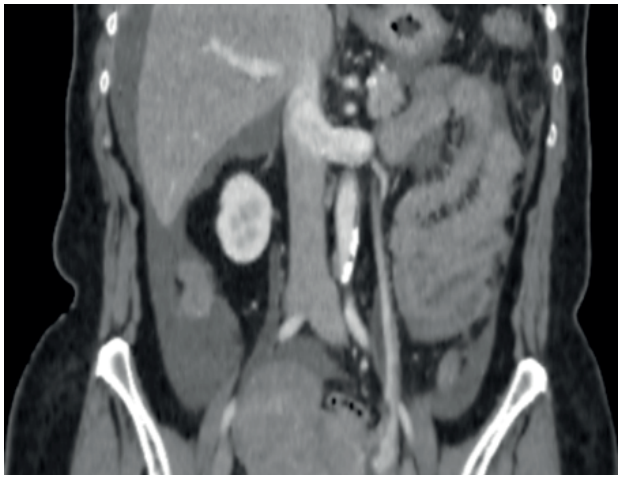

Figure 4. *Coronal view of computed tomography scan of abdomen post contrast enhancement, showing mass-like enlargement and enhacement of appendix. There is moderate ascites. Pelvic mass in partial view.*

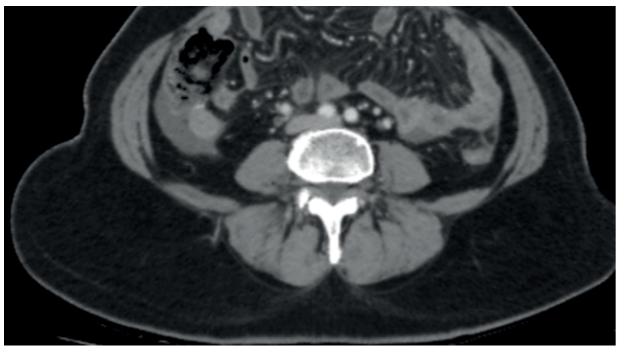

Figure 5. *Axial view of computed tomography scan of abdomen post contrast enhancement, showing mass-like enlargement and enhacement of appendix. There is moderate ascites.*

Approximately 800-1,000 ml of ascitic fluid was drained and sent for cytology. Pre-operatively, ovaries were not separately visualized of the pelvic mass. A 5 × 5 cm ovarian mass was identified on the right side. Multiple friable left ovarian masses were identified, collectively measuring 10-12 cm, and were inseparable from the posterior surface of the uterus and also from the pouch of Douglas. Total abdominal hysterectomy and bilateral salpingo-oophorectomy, partial omentectomy, and appendectomy were done. Samples were sent for histopathology.

Cytology of yellowish-colored ascitic fluid showed few atypical suspicious cells. Histopathology revealed moderate to poorly differentiated (grade 2/3) ovarian papillary adenocarcinoma with the ovarian surface, omental, and appendiceal luminal involvement by the pathologic process (Figure 7).

The appendiceal wall and serosa were free of tumors. Uterus and fallopian tubes were also free of tumor involvement.

photomicrograph of ovarian mass. Normal parenchyma was completely replaced by a solid tumor characterized by the proliferation of papillae, both lined by single- or multi-layered pleomorphic epithelial cells. Intense cellular and nuclear pleomorphism and numerous mitotic figures are seen (Figures 8 and 9). The patient was referred to the oncology department for further management.

Case Discussion

Ovarian cancer is one of the most common malignant tumors in women worldwide. Given the stable global incidence of this carcinoma for the last few decades, it still is the eighth most common cause of female mortality with epithelial ovarian neoplasm being the most commonly encountered histologic type [1].

Less than 50% of patients survive for more than 5 years after being diagnosed with ovarian cancer. Post-menopausal women are predominantly affected. Asymptomatic early stage and non-specific symptoms in the late stage make the disease much advanced at the time of presentation.

Physical examination, transvaginal ultrasonography, and CA-125 biomarker levels are helpful in the diagnosis of this condition. Treatment revolves around surgery with or without chemotherapy [5].

The appendix could be a potential site for metastasis by ovarian malignancies. However, it is rarely seen. Clinical, histological, and immune-histochemical discrimination between primary ovarian malignancy and the primary appendiceal tumor is very difficult [6].

Appendiceal metastasis is uncommon in patients with ovarian cancers [7]. Clinical and radiological assessment of appendix and routine appendectomy as part of late-stage ovarian cancer management can be of value in tumor downstaging and improvement in 5-year survival

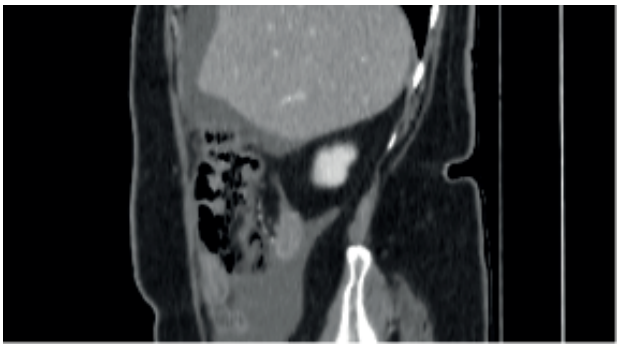

Figure 6. *Sagittal view of computed tomography scan of abdomen post contrast enhancement, showing mass-like enlargement and enhacement of appendix.There is moderate ascites.*

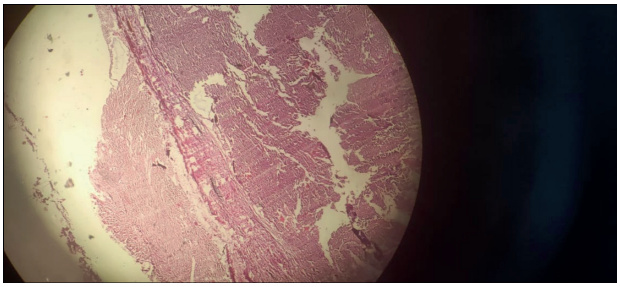

Figure 7. *Histopathology of appendiceal specimen revealed moderate to poorly differentiated ovarian papillary adenocarcinoma*

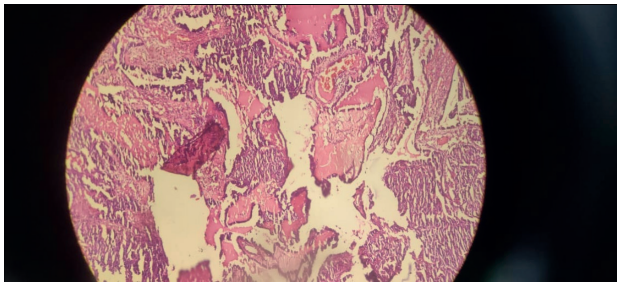

Figure 8. *photomicrograph of suspicious ovarian tissue showing complete replacement of normal ovarian tissue by papillary proliferation with pleomorphic epithelial cells. Cellular and nuclear pleomorphism seen with numerous mitotic figures*

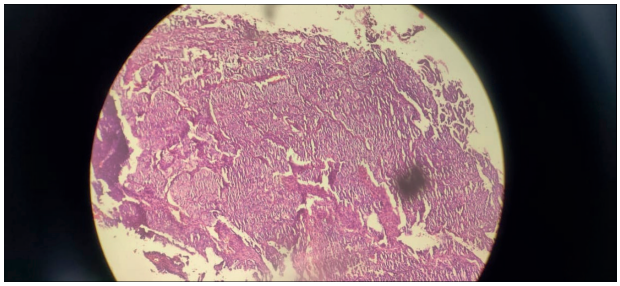

Figure 9. *photomicrograph of suspicious ovarian tissue showing complete replacement of normal ovarian tissue by papillary proliferation with pleomorphic epithelial cells. Cellular and nuclear pleomorphism seen with numerous mitotic figures*

rates [8]. The risk factors for appendiceal metastasis in ovarian carcinoma patients include age, grade, and stage of the tumor, right-sided tumor, large tumor size, ascites, extra-genital organ involvement (omentum, peritoneum, bowel), lymph node metastasis, and positive cytology [9].

A retrospective study conducted by Ayhan et al. [10] that included 69 epithelial ovarian carcinoma patients showed that 39 (56.5 %) patients had serosal appendiceal metastasis (involving only the serosa) while 30 (43.5 %) patients had sero-mucosal metastasis (tumoral spread to muscular or mucosal surfaces of the appendix). No significant prognostic difference was noted between these groups.

As part of the initial surgical staging procedure, a routine appendectomy can be an indication in patients with epithelial ovarian carcinoma. This is likely due to the significant rate of tumor upstaging in early-stage disease and cytoreduction in advanced stages [4]. A normal-looking appendix does not exclude metastasis. Appendectomy, being an easy procedure, with no significant post-operative morbidity, can be a part of tumor debulking and staging surgery [6].

Conclusion

Asymptomatic early stage and non-specific symptoms in late stages account for delayed presentation of ovarian carcinoma when it has already metastasized to various parts of the body. Distant metastatic sites independently affect the prognosis in ovarian cancer patients. Appendiceal metastasis in ovarian cancer patients is uncommon and apparently normal looking appendix does not exclude metastasis. Appendectomy can be utilized as an adjunct to routine ovarian cancer staging protocol and debulking surgery in order to have better prognostic outcomes and better differentiation of primary ovarian malignancy from the second primary.

What is new?

Ovarian cancer, being highly malignant, is usually diagnosed at an advanced stage when it has already metastasized to various organs. The authors present a case with the involvement of the appendix as a site of metastasis and recommend appendectomy as part of routine debulking surgery.

List of Abbreviations

CT Computed tomography

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

None.

Consent for publication

Written and informed consent was taken from the patient to publish this case report.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

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Summary of the case

1	**Patient (gender, age)**	57, female
2	**Final Diagnosis**	Appendiceal metastasis from ovarian carcinoma
3	**Symptoms**	Lower abdominal pain with distension
4	**Medications**	None
5	**Clinical Procedure**	Staging laparotomy, debulking surgery, and appendectomy
6	**Specialty**	Radiology