



Carcinoma Lung Presenting As Ovarian Mass – A Case Report

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Abstract

Differentiation of primary versus secondary malignant neoplasms of the ovary presents a diagnostic dilemma particularly when the patient presents initially with a large ovarian mass. The secondary tumors usually arise from digestive system or breast, while a primary in the lung is very rare. We report the case of a 28 year old lady who presented with bilateral adnexal complex mass and a left sided pleural effusion on the preoperative computed tomography scan, subsequently underwent a staging laparotomy with removal of the mass, total abdominal hysterectomy, bilateral salpingo-oophorectomy, total omentectomy, appendisectomy, pouch of douglas and bladder peritonectomy. Initial pathologic examination of the specimen suggested primary mucinous adenocarcinoma (Cytokeratin 7 (CK7) positive and CK20 negative). No Gastrointestinal (GI) tract primary and pleural fluid was negative for malignant cells. The patient was referred to our centre after initiation of chemotherapy in the line of a primary ovarian malignancy. The pathology review at our centre showed morphology and IHC more in favour of a metastatic lesion from a lung primary. (CK7+, TTF-1+ and Napsin+, CK 20-, CDX2- and PAX 8-). Repeat CT Chest revealed a lobulated mass left lower lobe and diffuse irregular pleural thickening. Chemotherapy was changed for the primary lung lesion. Our case report focuses on the clinical and pathologic diagnostic challenge of distinguishing secondary from primary ovarian neoplasms as well as locating the site of primary. Need and usefulness of a complete immunohistochemical profile is also stressed upon.

Keywords: secondary ovarian neoplasm, lung primary, immunohistochemistry

INTRODUCTION

Primary ovarian malignancy is the most common adnexal tumor ⁽¹⁾. Of the secondary ovarian malignancies, gastrointestinal and breast primaries are common ⁽²⁾. Lung is a rare site for primary in ovarian metastases. A high index of clinical suspicion and a multidisciplinary approach with a good pathology and radiological work up is necessary in this case. In most of the cases, morphology and imaging may not help in the differentiation and immunohistochemistry aids in definitive diagnosis. We report a case of lung adenocarcinoma with metastases to ovary and we discuss the dilemmas in the differential diagnoses and the usefulness of IHC.

CASE REPORT

28 Year old previously healthy lady, mother of two children presented with polymenorrhea, lower abdominal pain on the right side and weight loss of three months duration. Gynecological examination revealed a right pelvic mass and USG abdomen showed well defined hetero-echoic lesion in right adnexa of 18 x 9 x 18 cm with solid and cystic components with multiple septations and left ovary was not visualized separately. Left moderate pleural effusion was noted. CT abdomen and pelvis showed heterogeneously enhancing solid cystic lesions in bilateral adnexa with multiple septations, minimal ascitis and pleural effusion on the left side. Pleural fluid cytology did not reveal any malignant cells. Serum CEA was 26.08 mcg/L and CA-125 was 322 U/ml. A Staging laparotomy was performed with removal of the mass, total abdominal hysterectomy, bilateral salpingo-oophorectomy, total omentectomy, appendisectomy, pouch of douglas and bladder peritonectomy. Initial histopathology was reported as primary mucinous adenocarcinoma ovary (CK7+, CK20-). In view of the elevated CA 125, absence of GI lesions in CT abdomen and negative pleural fluid cytology, patient was started on chemotherapy with Paclitaxel and Carboplatin. The patient was

referred to our centre at this time of clinical course.

On review of the pathology specimens at our centre, the neoplasm was composed of atypical glands lined by tall columnar mucinous cells with moderately pleomorphic nuclei and a fibrocollagenous stroma (fig.1a). The morphological appearance was in favor of metastatic adenocarcinoma rather than primary ovarian tumor. GI endoscopy was normal. Later the full immunohistochemistry (IHC) profile showed diffuse strong positivity for CK7, TTF-1 and Napsin (fig.1b-1d), negative for CK 20, CDX2 and PAX 8. Immunoprofile was strongly in favor of metastasis from primary in the lung. CT scan of chest (fig.2a-2c) showed heterogeneously enhancing diffuse irregular pleural thickening involving the entire left hemithorax with evidence of volume loss. The left diaphragm was also involved. The pleural thickening appeared to be contiguous with a lobulated mass involving the left lower lobe and reaching upto the left hilum. Left empyema and a few heterogeneously enhancing enlarged mediastinal nodes were also seen. In view of the tissue morphology, IHC and CT thorax picture the diagnosis of adenocarcinoma lung with metastasis to ovary was made and chemotherapy was changed to Inj. Pemetrexed and Carboplatin.

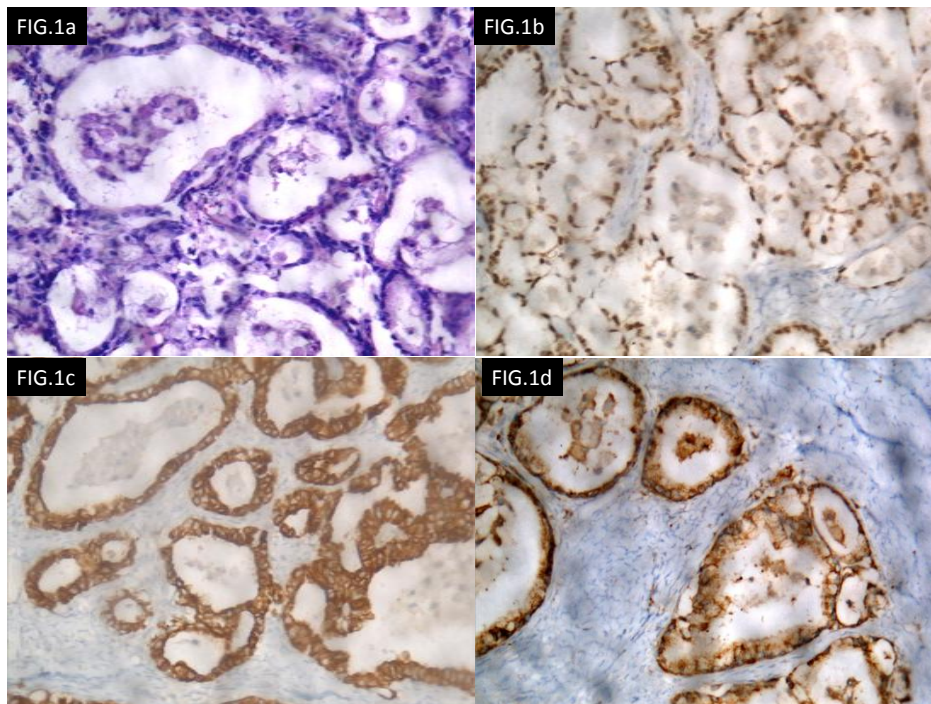


Fig. 1a: Photomicrograph of the neoplasm showing atypical glands lined by tall columnar mucinous cells with moderately pleomorphic nuclei and a fibrocollagenous stroma (H& E x200).

Fig. 1b: TTF1 positivity

Fig. 1c: CK7 positivity

Fig. 1d: napsin positivity.

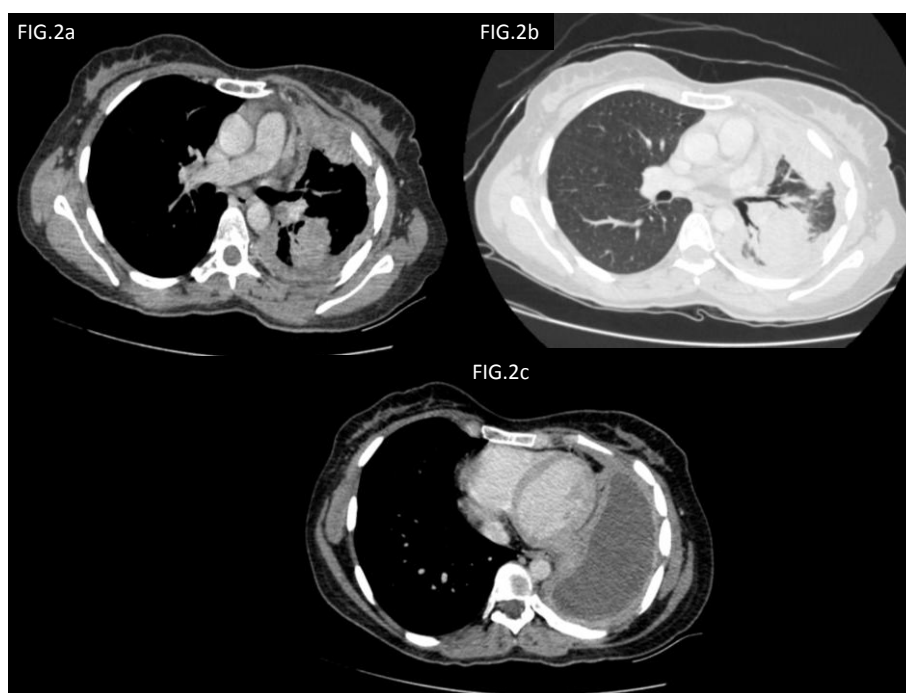


Fig. 2a, 2b and 2c: CT scan of chest showing diffuse irregular pleural thickening in entire left hemithorax which appeared to be contiguous with a lobulated mass involving the left lower lobe and left empyema.

DISCUSSION

The most common malignancy involving ovaries are primary ovarian epithelial tumors. In a large

study by Shi Y et al in 10288 patients with malignant ovarian neoplasms, only 10% were metastatic ⁽¹⁾. Ovarian metastases are more

common from non-gynaecologic sites than those from female genital tract and the most common among them being gastrointestinal tract adenocarcinomas⁽²⁾. Differentiation of secondary from primary ovarian malignancy is difficult and requires high index of clinical suspicion and targeted investigations.

Morphologically, bilaterality and multinodularity are common in secondary ovarian carcinomas, and in three fourths of cases, both ovaries are grossly involved. This can be compared with the very high frequency of unilateral ovarian involvement in primary ovarian tumors of endometrioid, mucinous, and clear cell types, which are confused often with metastatic tumor. Secondary ovarian neoplasms usually present with high-stage disease, affecting multiple peritoneal sites, omentum, and retroperitoneal lymph nodes⁽³⁾. Our patient had bilateral adnexal mass with involvement of both ovaries. Riitta Antila et al⁽⁴⁾ in their comparison of characteristics of primary vs secondary ovarian malignancy noted that a solid mass and the absence of ascites in the preoperative US evaluation were significantly more prevalent among patients with a secondary rather than with a primary ovarian malignancy. They also concluded that elevated preoperative level of CEA, and possibly TATI should raise suspicion of the presence of a metastatic ovarian tumor. In our case, the lesion was solid cystic with minimal ascites and serum CEA was elevated. Elevated CA 125 can be seen in malignancies of extraovarian sites as well as tissues arising from coelomic epithelium which includes pleura also. In our case we had extensive pleural involvement from lung malignancy.

Carcinoma lung usually metastasize to bones, central nervous system, heart and pericardium, pleura, adrenal gland and liver. Lung cancer is an unusual primary for developing metastasis to ovary. Fujiwara et al.⁽⁵⁾ found only one case of lung primary in an analysis of 313 patients with ovarian metastases. In a retrospective study of 59 cases of metastases to ovary by Richard G Moore et al over a period of 11 years not even a single

cases of lung primary was identified⁽⁶⁾. Around 5% of women with lung cancer were found to have ovarian metastases at autopsy⁽⁷⁾. But now as the incidence of lung cancer is increasing in females, lung should be evaluated as a possible site of primary malignancy. Metastatic lung adenocarcinomas can mimic primary surface epithelial tumors of the ovary. They typically appear as uni/bilateral multinodular lesions, with widespread necrosis and extensive lymphovascular invasion; involvement of the ovarian surface is rare for adenocarcinoma of the lung, while for the small-cell carcinoma histotype, the ovarian parenchyma is usually obliterated⁽⁸⁾. Ovarian mass can present before, simultaneously or later with the diagnosis of primary. In a case report by Irving and young 53% was diagnosed to have a primary in lung before metastasis, 16% had ovarian metastasis before primary in lung and 31 % had simultaneous presentation⁽⁸⁾. In our case, the patient presented with an ovarian tumor which was managed initially as a primary ovarian malignancy and later primary in the lung was identified.

Immunohistochemistry studies with CK-7 and CK-20 staining have been widely used to differentiate between primary and secondary ovarian malignancies. The importance of IHC was first described by Yeh et al⁽⁹⁾. Adenocarcinoma is likely to be a primary lung tumor if CK-7+ / CK-20- phenotype and demonstrates either TTF-1 or PE-10 positive staining. The combined use of Napsin A and TTF-1 has increased the sensitivity and specificity in identifying lung origin for primary as well as metastatic adenocarcinomas⁽¹⁰⁾.

In our patient clinical presentation was favoring a primary ovarian carcinoma with a large abdominal mass with possible lung metastases, but detailed pathological examination and immunoprofile was suggestive of metastasis from lung adenocarcinoma. On search for primary both gastrointestinal and lung evaluations were done. CT scan of chest showed a lesion suggestive of lung primary. Thus though this case had a

simultaneous presentation, the possibility of metastases was considered after the pathology review and IHC. Meanwhile the patient was treated as a primary ovarian carcinoma and she was started on palliative chemotherapy for lung adenocarcinoma after confirmation which took almost one month after initial diagnoses. So the possibility of a secondary malignancy should be considered in ovarian adenocarcinoma and a full IHC profile as the treatment and prognoses are different depending on the primary site of lesion.

CONCLUSION

Differential diagnosis of a primary versus secondary malignant tumor of the ovary is difficult. A multidisciplinary approach considering the clinical, radiological and pathological aspects will help in differentiating as well as locating the primary site of tumor. Metastases from lung to ovary are very rare. It is important to consider lung as a possible primary site because of the increasing incidence of lung cancer in females now. The staging, treatment and prognosis change entirely depending on the site of origin of the malignancy.

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