



Radio-Diagnosis

COMPUTED TOMOGRAPHIC FEATURES OF HIGH-GRADE SEROUS CARCINOMA OF OVARY

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ABSTRACT

Introduction: Ovarian malignancy is the second most common gynecological malignancy. A positive family history is a major risk factor for developing the disease particularly in women with breast cancer-associated genes (BRCA) 1 and 2 mutations. Although trans vaginal ultrasound is the initial imaging modality for the detection of ovarian malignancies, Computed tomography (CT) provides an excellent imaging modality for the evaluation of these patients. Computed tomography (CT) can provide staging information for preoperative planning and determination of surgical resectability. **Materials and methods:** The study was a hospital based descriptive study conducted at Department of Radio-Diagnosis in GSL medical college and hospital, Rajahmundry. **Results:** Surface epithelial ovarian malignancies are most common of all the ovarian malignancies which accounts for approx. 75-85%. Under surface epithelial tumors, high grade serous is the most common which accounts for approx. 60-70 % of all the serous carcinomas of the ovary. **Conclusion:** High grade serous cystadenocarcinoma is the most common type of surface epithelial tumours of ovary. With proper radiological, histopathological and Ca-125 evaluation, early diagnosis and management is possible.

KEYWORDS : Surface epithelial tumors, high-grade serous cystadenocarcinoma, peritoneal deposit, histopathological examination, Ca-125 levels, BRCA mutations

Introduction:

Ovarian malignancy is the second most common gynaecological malignancy. A positive family history is a major risk factor for developing the disease particularly in women with breast cancer-associated genes (BRCA) 1 and 2 mutations.¹ Although trans vaginal ultrasound is the initial imaging modality for the detection of ovarian malignancies, Computed tomography (CT) provides an excellent imaging modality for the evaluation of these patients.² Computed tomography (CT) can provide staging information for preoperative planning and determination of surgical resectability.³ Computed tomography is the most commonly used imaging modality for preoperative staging and follow up.⁴ Ovarian neoplasms can be categorized on the basis of histopathologic features into epithelial surface cell tumors, germ cell tumors, sex cord-stromal tumors, and metastases.⁵ Epithelial cell neoplasms are the most common category, and they can be benign, borderline, or malignant. High-grade serous cystadenocarcinoma accounts for the majority of malignant ovarian tumors and the most ovarian cancer deaths. Ovarian cancer causes more deaths than any other cancer of the female reproductive system.⁶

Materials and methods: This study included 15 women with raised Ca-125 levels who underwent computed tomographic imaging at GSL medical college and general hospital, Rajahmundry within 3 months. Nine women were postmenopausal. Seven patients had undergone hysterectomy for uterine fibroadenomas and other causes.

Clinical symptoms in majority of the test subjects were abdominal pain and distension, weight loss. In all the cases, initial plain abdomen and pelvis thin sections were acquired. After the contrast injection serial thin sections of abdomen and pelvis were acquired. The attenuation values of the lesion, size and location of the lesion, nature of the lesion, compression over the adjacent organs and loss of fat planes with adjacent abdominal organs and other findings were studied.

Results: Surface epithelial ovarian malignancies are most common which accounts for approx. 75-85% of all ovarian malignancies. Of all the test subjects with high grade serous cystadenocarcinoma of ovary, nine patients had extensive disease involving the peritoneum and adjacent mesentery, lymph nodes and variable amount of ascites in abdomen and pelvis. Of all the patients, nine patients had lesion size of above 10 cm.

Few patients with long duration of the disease developed abdominal wall edema which is seen in four patients, ascites in the both abdomen

and pelvis in six patients, loss of fat planes with the uterus in five patients and mass effect over the bladder in seven patients. Almost all the lesions showed solid cystic areas with wall enhancement and enhancing septations. Nodular enhancement of the wall, papillary projections and thick enhancing wall with solid components seen in ten patients. Of all the cases included in the study, one case was a post operative follow-up case with recurrence.

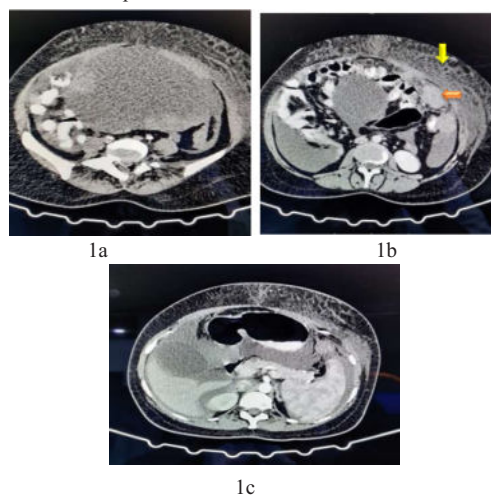


Figure 1: A 36-year-old female with abdominal pain and distension since 2 months. Contrast enhanced CT scan obtained for abdomen and pelvis which showed (on axial sections) large solid cystic lesion in the pelvis (1a), diffuse subcutaneous edema of the abdominal wall (yellow arrow) and metastatic peritoneal deposit (orange arrow) (1b) and nodular deposit along the gastrosplenic ligament (arrow) (1c).

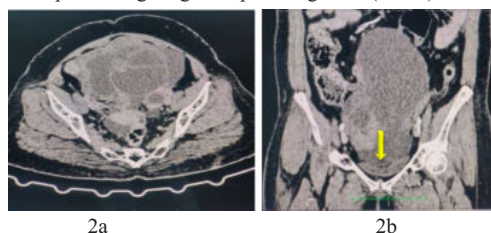


Figure 2: A 51-year-old female with complaints of abdominal pain, distension since 3 months with increased frequency of micturition since 20 days. Contrast enhanced CT imaging of abdomen and pelvis showed large solid cystic lesion with thick enhancing wall and thin internal septations (2a-axial section) and mass effect over the bladder (arrow) (2b-coronal section)

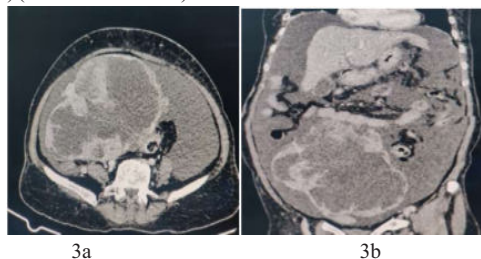


Figure 3: A 52-year-old female with complaints of severe abdominal pain and distension since 2 months. Contrast enhanced CT imaging of abdomen and pelvis showed large solid cystic necrotic lesion with nodular wall enhancement, superior displacement of bowel loops by the mass and gross ascites in abdomen and pelvis (3a- axial section and 3b-coronal section)

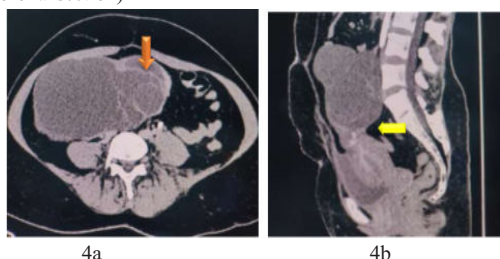
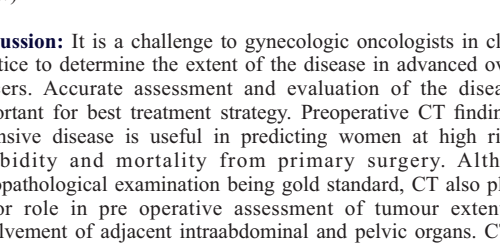


Figure 4: A 45-year-old female with complaints of abdominal pain since 10 days with irregular menstrual cycles since 6 months. Contrast enhanced CT imaging of abdomen and pelvis showed large cystic lesion with wall enhancement and thin enhancing septations (4a-arrow) and loss of fat planes with the fundal portion of uterus (4b-arrow)



Discussion: It is a challenge to gynecologic oncologists in clinical practice to determine the extent of the disease in advanced ovarian cancers. Accurate assessment and evaluation of the disease is important for best treatment strategy. Preoperative CT findings in extensive disease is useful in predicting women at high risk of morbidity and mortality from primary surgery. Although histopathological examination being gold standard, CT also plays a major role in pre operative assessment of tumour extent and involvement of adjacent intraabdominal and pelvic organs. CT can provide staging information for preoperative planning and determination of surgical resectability, demonstrate tumor response to therapy, and allow detection of persistent or recurrent disease.⁶ All the cases that are included in the study were biopsy proven malignancies. Epithelial tumors are primarily cystic and, when malignant, they are associated with varying proportions of a solid component.⁸ Abdominal distension is the most common complaint in almost all the patients with lower abdominal pain being the second most common complaint. Patients who had mass effect over the bladder experienced increased frequency of micturition. Peritoneal deposits are seen in eight patients (50 percent) of the test subjects. One patient had nodular deposit along the gastrosplenic ligament. Ascites is a common feature in almost all the patients, ascites only in pelvis in nine patients, ascites in abdomen and pelvis in six patients.

This study has several advantages as it was done in an institution. All the CT scans were performed at the same place and the surgery can also be done in the same institution. Histopathological examination and Ca-125 evaluation also can be done at the same place and follow-ups are easy as the data will be stored. The serum Ca-125 level can be used for the estimation of tumour recurrence after cytoreductive surgery and chemotherapy.⁹

Histopathological examination showed high grade serous carcinoma in all the patients. Primary debulking surgery followed by chemotherapy is an established standard treatment for epithelial ovarian carcinoma with excellent therapeutic results.¹⁰ Computed tomography of the chest, abdomen, and pelvis with contrast is useful in

patients with suspected advanced stage high grade serous carcinomas for the extent of disease and the presence of intrahepatic disease and pleural effusions or nodularity.¹¹

Regular screening strategies with Ca-125 and transvaginal sonography are primarily helpful in women at average risk of ovarian malignancies.

Conclusion:

Despite the development of effective surgical and chemotherapeutic approaches, ovarian carcinoma remains a leading cause of death from gynecological malignancy. The treatment of patients with ovarian masses requires initial stratification of risk based on the imaging appearance of the mass, clinical presentation and findings and serum Ca-125 level. Distant metastasis and extra peritoneal spread leads to poor prognosis. Hence early diagnosis by imaging techniques, histopathological examination and Ca-125 evaluation reduces the risk of progression of the disease and metastasis.

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