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Ovarian malignancy in pregnancy: A clinicopathologic analysis of 16 cases

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Abstract
Introduction: Ovarian cancer is the leading cause of death from the gynecological cancer. Ovarian cancer is the fifth leading cause of death among the women world wide. It is third leading cancer among Indian women after cervical and breast cancer. Overall incidence of ovarian tumor in pregnancy is 1:2000 births out of which 3-5% are malignant.
Aims & Objective: To evaluate the clinical profile and pregnancy outcomes in patients with ovarian cancer.
Methodology
- We retrospectively analysed medical records of 16 patients who were diagnosed and treated at MKCG medical college between January 2011-December 2016.
- Diagnosis was made on the basis of clinical examination and USG imaging.
- Asymptomatic cases were diagnosed during routine inspection of tubes and ovaries at caesarian delivery.

Results: 16 cases diagnosed among 40,000 pregnancy, most of the patient belong to age group of 20-25years (57%), 14 patients were Primigravida, Most of the patients were asymptomatic when diagnosed. On histopathology 44% of tumour are epithelial tumour. All 8 cases diagnosed during second and third trimesters underwent staging laparotomy with conservative surgical management which included USO, omentectomy & multiple biopsy. Caesarian hysterectomy was done at 36 weeks of gestation in all above 8 cases. All asymptomatic cases diagnosed during routine inspection of ovaries and tubes at caesarian delivery underwent caesarian hysterectomy with BSO, omentectomy and multiple site biopsies after confirmation of frozen section. Chemotherapy was given in all cases after HP report confirmation. Cyclophosphamide - cisplatin regime were used while in dysgerminoma BEP regime was given.

Keywords: Pregnancy, gynecological cancer, ovarian cancer

Introduction
Overall incidence of ovarian tumor in pregnancy is 1:2000 births out of which 3-5% are malignant. Ovarian malignancy in pregnancy is a rare entity with incidence ranging between 1:20,000 births -1:50,000 births. Although rare it is the second most common gynaecological cancer diagnosed during pregnancy after cervical cancer [1-4].

Most ovarian malignant tumour in pregnancy are either germ cell tumour or epithelial cancer of low grade. USG is an essential imaging technique which assist in diagnosis of ovarian tumour in pregnancy [5].

Pelvic MRI with gadolinium injection can be performed after first trimester if USG examinations are doubtful. Role of tumour markers are limited as CA-125 levels are high during early pregnancy and early puerperium but can be used for follow up.

Aims & Objective
To evaluate the clinical profile and pregnancy outcomes in patients with ovarian cancer.

Methodology
- We retrospectively analysed medical records of 16 patients who were diagnosed and treated at MKCG medical college between January 2011-December 2015.
- Diagnosis was made on the basis of clinical examination and USG imaging.

Asymptomatic cases were diagnosed during routine inspection of tubes and ovaries at caesarian delivery

- Out of 16 patient diagnosed as ovarian cancer in pregnancy 7 were referred from peripheral centers.
- Patients underwent laparotomy and staging was done as according to FIGO staging system
- Pathologists at institution reported intraop frozen section biopsies and postop specimens.
- Patients were given chemotherapy after confirmation of HP report.
- Patients were followed up with clinical, serum tumour markers and radiologic assessments.Followup was recorded upto the date of last contact or death.

Results

Incidence: 16 cases diagnosed among 40,000 pregnancy, **Incidence** → 0.4 /1000 deliveries

Parity: 14 patients were Primigravida & rest 2 Multigravida

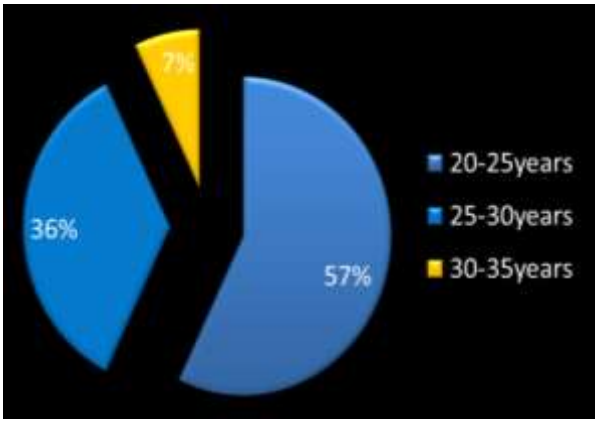

Fig 1: Distribution of Cases According to age

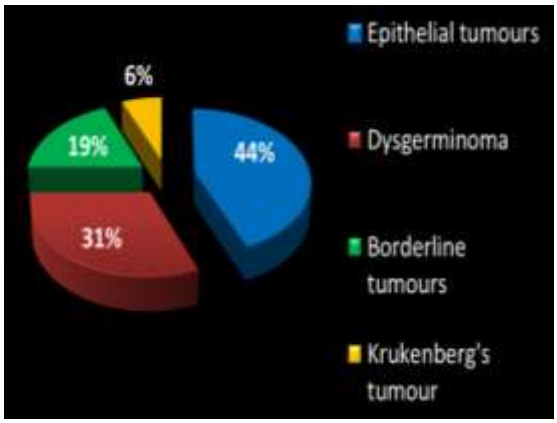

Fig 2: Histopathology of Tumors

Presenting Symptoms

- Most of the patients were asymptomatic when diagnosed.
- Among symptomatic, patients presented with bloating, increase in urinary frequency, abdominal pain and ascitis. One patient of krukenberg tumour was detected along with breast cancer.

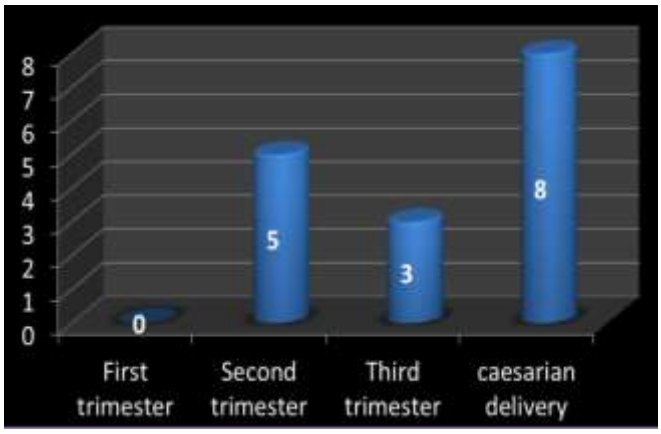

Fig 3: Pregnancy duration at diagnosis

Management

- All 8cases diagnosed during second and third trimesters underwent staging laparotomy with conservative surgical management which included USO, omentectomy & multiple biopsy.
- Peritoneal fluids were sent for HP study. Chemotherapy given in all cases after HP confirmation except in 3 Borderline Tumours.
- Caesarian hysterectomy was done at 36 weeks of gestation in all above 8 cases.
- All asymptomatic cases diagnosed during routine inspection of ovaries and tubes at caesarian delivery underwent caesarian hystrectomy with BSO, omentectomy and multiple site biopsies after confirmation of frozen section.
- Chemotherapy was given in all cases after HP report confirmation. Cyclophosphamide - cisplatin regime were used while in dysgerminoma BEP regime was given.
- Placenta in all cases were sent for HP study.

Table 1: Characteristic of Patients

Histology	Eoc	Bot	Dysgerminoma	Krukenberg
No. of cases	7	3	5	1
Stage 1	6	3	5	-
Stage>1	1	-	-	-
Adjuvent chemotherapy	7	-	5	1

Maternal Outcomes

Condition of all mothers were satisfactory after surgery except one who died on post-operative day 28.

Table 2: Fetal Outcome

Birth status	still birth	0
	Live birth	16
GA at delivery	Preterm	10
	Term	6
Birth weight	≤ 2.5Kg	13
	>2.5Kg	3
Conginital anomaly	NIL	

Discussion

- Incidence is *high* in our study as our institution is a tertiary care centre and almost half of the cases were referred from peripheral centers.
- Our methods were similar to ZHAO *et al.* [3]
- Majority of our patients were clinically asymptomatic when diagnosed. Most of them were incidently detected by USG at an early stage resulting in good prognosis for mother and neonate.
- Our study shows that early finding of ascitis by USG has more chances of malignancy as investigated by ZANOTTI *et al.* [4]
- Gotlieb's report shows in early stage cancer conservative

surgery preserving pregnancy has sucessful outcomes as in our study [10].

- Mooney *et al.* described multiple areas of microinvasion in some epithelial borderline tumour which was not seen in our study [11].
- Karlen *et al.* and Bakri *et al.* showed adverse fetal outcomes in presence of ovarian tumour due to difficulty to accommodate. No still births in our study was found [12, 13].
- Ovarian malignancy in pregnancy is a rare entity. Fortunately *75%* of these found in pregnancy are early stage malignancy with 5year survival rate between 70-90%.
- Pregnancy appearently does not alter the prognosis of most ovarian malignancy.
- Management depends on parity, weeks of pregnancy and type of malignancy [6-9].
- Frozen section though mandatory is not very conclusive.
- Fetal outcome is not affected by chemotherapy during second and third trimester.
- No congenital anomaly detected in any newborn.

➢ Neither dystocia nor tumour metastasis to placenta or fetus were recorded.

➢ There were NO fetomaternal complication for patient who underwent surgical intervention during pregnancy.

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