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Borderline Ovarian Tumor: A Case Report and Review of Literature

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Abstract:
Introduction*: Borderline ovarian tumors occur during third to fourth decades of women's lives and are diagnosed as being limited to one ovary in 80% of cases. The recommended treatment is hysterectomy with bilateral salpingo oophorectomy.However 30% of these tumors occur in younger women who have not yet given birth in which preservation of fertility is to be considered. We present a case of borderline ovarian tumor in a young unmarried woman which was managed by conservative surgery and follow up.*
Case Report: *A 23 year old unmarried woman presented with the complaints of distension of abdomen, decreased appetite and weight loss and shortness of breath for the last two months. On abdominal examination, distension of abdomen and a huge mass occupying all quadrants of abdomen were seen. CA19-9 levels were elevated. Ascitic fluid tap was negative for malignancy; Ultrasound abdomen revealed a lower abdominal mass lesion which was later confirmed by CECT abdomen.Its findings were: awell-defined mass lesionmeasuring 4.4x10.1x13.7cm; Thickening of omentum;no bowel pathology;no lymphadenopathy andimpression was a cystic mass with internal septae suggestive of ovarian neoplastic lesion probably arising from left ovary. Staging laporotomy was done.Per operatively, 3 litres of mucinous fluid was present, left ovary was the seat of a large 15 cm. ovarian cyst with intact capsule. Right tube, ovary and uterus were normal. Left salpingo oophorectomy, totalomentectomy were done and the specimens were sent for frozen section biopsy and report showed a mucinous tumor and omentum and ascitic fluid were negative for malignancy.Histopathology report revealed a mucinous tumor with lining epithelium showing focal areas of nuclear atypia and areas of mild degrees of nuclear stratification suggestive of Borderline mucinous tumor of the ovary.The patient was having stage I Borderline tumor of ovary and was followed up with yearly ultrasound and clinical examinations and was advised for early child bearing.*
Conclusion*: Ovarian cysts in young women which are associated with elevated levels of tumor markers and ascitis require careful evaluation.C.E.C.T. Abdomen is useful in detecting extent of disease in the abdomen.In the absence of extra ovarian disease on C.E.C.T. Abdomen and absence of malignant cells in ascitic fluid, still the diagnosis of Border line ovarian tumors should be kept in mind and staging laporotomy and frozen section evaluation of mass should be planned. In young women, who are yet to have children, unilateral salpingo oophorectomy with careful evaluation of other ovary may be done.These women should be counseled for the need for a long term follow-up, early child bearing and possibility of recurrence.*
Keywords: *Border line ovarian tumors,frozen section, nuclear stratification, Tumor Markers, Vaginal ultrasound.*

I. Introduction

In 1929, Taylor first described a subset of epithelial ovarian tumors that he termed semimalignant.These tumors have more favourable outcome than other ovarian cancers but were not seperatelyclassisied by FIGO & WHO until the early 1970s.In 1973, the FIGO gave the term Tumors of low malignant potential for those ovarian tumors whose oncologicalbehaviour and histological changes of the surface epithelium do not meet the specific criteria of benignity or malignancy.(1)Since then WHO called them Borderline Ovarian Tumors.(2) These tumors usually occur during third to fourth decade of women's lives and are diagnosed as being limited to one ovary in 80% of cases. Because of this, their biological and oncological behaviour is good with overall survival rate of ten years for 90% of those in initial stages (3) Survival rate is 60% of those in advanced stages.(4,5).The recommended treatment is hysterectomy with bilateral salpingo oophorectomy . However 30% of these tumors occur in younger women whohave not yet given birth. These cases raise management dilemmas as to the extent of resection and safety of conservative treatment, duration of follow up, efficacy of follow up methods, the contraceptive options,whether ovarian stimulation protocols could be employed in case of infertility and whether they should have radical surgery following child bearing.We present a case of borderline ovarian tumor in a young unmarried woman which was managed by surgery and follow up.

II. Case Report

A 23year old unmarried woman presented to GYNAEC clinic with the complaints of distension ofabdomen, decreasedappetite,weight loss,fullness after eating a little quantity of food and shortness ofbreath for the last two months. She attained menarche at 14yrs of age and was having normal regular menstrual cycles. No other significant comorbidities were present.

General examination was unremarkable except forslight exertional dyspnea and mild tachypnea. On abdominal examination, distension of abdomen was present. A huge mass occupying all quadrants of abdomen was made out. There was free fluid in abdomen. There wasno tenderness and bowel sounds were present.As she was unmarried, per vaginal examination could not be done. Pulse rate was 96/mt, resp. rate 28/mt &blood pressure was 120/70mmHg.Lungs were clear, vesicular sounds heard. Breasts were soft

Routine investigations like Complete blood count,Random blood sugar, serumcreatinine & Blood urea were within normal limits. H.I.V. and HBSAg were non-reactive .Hb-13gm/dl.Mantoux with 10TU revealed normal report...Ultrasound abdomen revealed non visualization of left ovary, A lower abdominal cystic mass lesion measuring 17x9.7cm. suggestive of left ovarian cyst with multiple internal septae with no solid areas wasseen. Massive exudative ascites wasseen. No evidence of abdominal lymphadenopathy. No evidence of detectable small and large bowel pathology. Impression was - left ovarian cyst with massive exudative ascites.

Figure 1 C.T.Abdomen - Coronal View showing mass lesion of ovary.

Figure 2 C.T. Abdomen - Axial view showing mass lesion of ovary.

Ascitic tap was ordered. One and half litres of ascitic fluid was tapped and the fluid was sent for cytology. Upper G.I. endoscopy and liver function tests were ordered.C.A.125 levels were within normal limits.CA19-9 levels were elevated i.e., 93.5u/ml (0-37 normal range).C.T.abdomen was done to assess the extent of disease. It showed a well defined cystic mass lesion measuring 4.4x10.1x13.7cm (TRxAPxCC) in the pelvis situated superior to uterus and urinary bladder. Mass showed thin internal septae with nosolid component, the walls and septae of cyst showed mild enhancementwith contrast administration. Left ovary was not separately made out.Moderate amount of asciteswas present in the abdomen and pelvis. No evidence of detectable bowel pathology.Stomach, small and large bowel loops were otherwise normal. Thickening of omentumwith multiple hypodense foci were present.No evidence of retroperitoneal lymphadenopathy.Impression was a cystic mass with internal septae in pelvis and septae showing mild enhancement suggestive of ovarian neoplastic lesion probably arising from left ovary.Moderate amount of ascites. Upper G.I.endoscopy showed erosive antral gastritis. Ascitic fluid cytology revealed foamy macrophages and occasional mesothelial cells. No evidence of malignancy.Case was referred to medical oncologist for second opinion and it concurred with my line of management. Patient was posted for staging laparotomy, for cyst removaland frozen section biopsy.

Patient underwent laparotomy under general anaesthesia.Per operatively 3 litres of mucinous fluid was present in peritoneal cavity. Sample sent for cellblock.Left ovary wasthe seat of a large 15cm ovarian cyst with intact capsule and it was removed after clamping infundibulopelvic ligament and specimen sent for frozen section biopsy. Right ovaryshowed thickening of capsule.It was not enlarged,no deposits .Omentum showed small deposits at 4 sites. Total omentectomy was done.Uterus, tubes were normal. Bowels,liver,stomach were palpated and no deposits were found. Uterovesical fold showed small deposits which were sent for H.P.E.

Frozen section report of left ovarian cyst and omentum showed a mucinous tumor and omental deposits showed fatty tissue with focal moderate lymphocytic infiltrate in the specimen.Histopathology report later revealed a multi loculated mucinous neoplasm.In majority of areas, the lining epithelium is single layered, columnar to cuboidal in nature with focal areas of nuclear atypia and areas of mild degree of nuclearstratification. The features wereregarded as Borderline mucinous tumor of the ovary. (Mucinous ovarian tumor of low malignant potential).Capsular breachwas not seen.No stromal invasion seen.Omental deposits were negative for any cellular abnormalities.Her postoperative period was uneventful and as patient was having a Stage I borderline mucinous tumor of the ovary, she was followed up with yearly ultrasound of abdomen and clinical examination. Patient was advised for early child bearing.Patient got married 3 years later and is having normal periods.

III. Discussion

B.O.T.s comprise 15-20%of epithelial tumors.(6)Average age of diagnosis is 40years.Riman et al assessed the risk factors for B.O.T.S in a case controlled study using regional registry of tumors in Sweden.(7) Parous women and women who breast fed their children have shown to have lower risk than others.(7)Factors shown to be linked to B.O.T.s are menarche, age at first pregnancy, smoking, menstrual history, family history of ovarian cancer.(8) :Borderline Ovarian Tumors are characterised by the presence of epithelial cells with nuclear atypia and mitotic activity in 10% or more of tumors without stromal invasion.(8)Histological subtypes of epithelial B.O.T.s are serous, mucinous, endometroid,clear and transitional cell tumors. Serous B.O.T.s account for 65% of all B.O.T.s where as 32% of them are mucinous. Serous B.O.T.s show two types of tumors. Type I show slow growth, limited to one ovary, have well established precursor lesions,characterised by mutations in the track of KRAS,BRAF,PTEN, A-catenin. Type II fast growing, without precursor lesions with high degree of aggressiveness.Characteristically these are associated with mutations are of P53 gene and over expression of genes of HLA-G, HER2,AKT.Borderline mucinous tumors have two histological types.Intestinal and endocervical.Mucinous tumors are rarely associated with peritoneal implants ,survival of women with stage I is 100% and that of advanced stage is 50%.Mucinous B.O.T.s reach large size,tend to be unilateral,can coexist with low grade invasive carcinoma.

Diagnosis is usually by an incidental finding on a gynecological ultrasound and finding an adenexal mass in pelvic examination.Generally these are asymptomatic and large tumors may present with abdominal pain,abdominal distension,ascites and dyspareunia.Vaginal ultrasound is the first step in evaluation of adnexal mass. Serological markers are elevated in half of the cases and C T abdomen, MRIand serological markers are used selectively.Engelen et al (21) assessed the level of CS-125 preoperatively which was found to be high in 8 of 33 patients, levels of CEA in 3 of 32 patients, CA19-9 in 11 of 24 patients.In patients with mucinous B.O.T.s CA19-9 was most frequently high (57%) when compared with CA-125(15%) C.T. Abdomen is used to detect abdominal disease. Intraoperative Frozen section is of value in distinguishing benign,borderline and malignant ovarian tumors. With Frozen section Over diagnosis in less than 10% and under diagnosis in 25-30% is reported in distinguishing a Borderline from a malignant ovarian tumor.(23) The value of complete staging has not been demonstrated for early stages but the opposite ovary should be carefully inspected for evidence of

bilateral disease.In a study,7 of 27 patients with presumed localized disease were upstaged following a surgical staging.(9)In two other studies, 16% and 18% of patients with presumed localized disease of low malignant potential were upstaged following staging laparotomy.(10,11) In one of these studies, yield for serous tumors were 30% compared to 0 % for mucinous tumors (12) Studies show that inpatients with localized intraperitoneal disease, negative lymph nodes had a lower recurrence(5%) than those with positive lymph nodes(50%)(13)In early stage disease, (stage I or II) no additional treatment is indicated for a completely resected tumor of low malignant potential.(14)When a patient wishes to retain child bearing potential, a unilateral salpingo-oophorectomy is adequate therapy.(15,16)Some physicians stress the importance of limiting ovarian cystectomy to stage I tumor where the margins of cystectomy specimens are free of tumor.(in a bilateral disease where at least an ovary should be preserved).(12)In a large series, relapse rate was higher with a conservative surgery.(cystectomy>unilateral oophorectomy>TAH, BSO); the differences however were not statistically significant, survival was near 100% for all groups.(13,18) Once a woman has completed her family, most but not all physicians favor removal of remaining ovarian tissue as it is at risk of recurrence of a borderline tumor, or even rarely a carcinoma.(12)

There is no consensus with respect to the best way to follow up for patients following treatment for stage I B.O.T.for early detection of recurrence.Clinical examination, vaginal gynaec ultrasound, CA-125 levels are useful in detection of recurrence. Zanetta et al analysed prospectively the follow up of 164 women with stage I B.O.T. who underwent conservative surgery for fertility.(19) The follow up was with clinical examination and vaginal ultrasound every 3 months for 2 years and every 6 months after that.CA-125 levels were done every 6 months for serous B.O.Ts.They concluded that vaginal ultrasound is the most effective technique for these patients.(19)As recurrences as far apart as 15 years were described follow up up to 15 years recommended.NCCN recommends follow-up with gynaec ultrasound. Patients who were treated conservatively after they meet maternity expectations must receive standard surgical treatment(removal of uterus and remaining ovary)(20) With respect to contraception, C.D.C. classifies it as category I (there is no restriction on the use of contraceptives)For women with B.O.T. there is no association between the use of H.R.T. before or after diagnosis and survival rate.(21) Stage I tumors do not need any adjuvant chemotherapy but in stage II tumors,Cysplatin,cyclophosphamide and doxorubicin monotherapy are tried. Based on data from literature, there is no contraindication for use of drugs of ovarian stimulation for future pregnancies in young patients who underwent conservative treatment.

IV. .Conclusion

Abdominal masses in young women require evaluation with ultrasound.Ovarian masses with internal septae even in the absence of solid component in the mass require follow up till resolution. Persistent masses of ovary call for tumor marker estimation .Ovarian cysts in young women which are associated with elevated levels of tumor markers and ascites require evaluation with C.E.C.T. abdomen or M.R.I. Pelvis.C.E.C.T. Abdomen is useful in detecting extent of disease in the abdomen.In the absence of extra ovarian disease on C.E.C.T. Abdomen and absence of malignant cells in ascitic fluid, still the diagnosis of Border line ovarian tumors should be kept in mind and staging laporotomy and frozen section evaluation of mass should be planned. In young women, who are yet to have children, unilateral salpingo oophorectomy with careful evaluation of other ovary should be done in unilateral Borderline ovarian tumor of the ovary.These women should be counseled for the need for a long term follow-up, early child bearing and possibility of recurrence.

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