Epithelial Ovarian Tumors by Nigam Ehsan

Case presentation

Patient History

A twenty-year-old, thirty-one weeks pregnant, African American female presents to the ultrasound department with limited fetal movements. Fetal movements were not felt for two months but patient did not consult a physician. Her physician did not hear a fetal heartbeat in the office. The patient complained of abdomen pain throughout the exam, felt out of breath and nauseous and looked very weak and frail. She had bad hygiene and a sad expression on her face. Patient had no known diseases or social contributing factors.

Ultrasound Findings

Upon ultrasound examination, a complex mass with multiple thick septations was seen in the left adnexa. The circumscribed mass with a well-defined contour measured 11.68 *6.54*8.34 cm. The left ovary was not visualized in a normal state. The patient had lost the baby many weeks back. Ultrasound confirmed no heart beat for the fetus.

Diagnosis and Follow-up

The patient was diagnosed with cystadenocarcinoma. This was a very late stage disease since she had metastasis in her lungs and liver shown on CT scan. The patient did not come for a
follow up to the ultrasound department after the initial evaluation. The chances of survival for this patient were very low as is seen in stage five diseases.

**Ovarian Cancer Risk Factors**

A history of breast-feeding, oral contraceptives, multiparty, and tubal ligation has shown increased incidences of carcinoma development. In vitro studies conclude that hormonal factors like Estrogen have shown to stimulate cell proliferation, predispose cells to genetic errors and cause malignant transformation. Smoking, diet, nulliparity, and obesity, are also major causes of ovarian cancer. Smoking decreases the reproductivity, and increases the chances for developing ovarian cancer especially the mucinous type. Diet rich in saturated fats, starch and red meats causes higher risk for ovarian cancer development. (Saleli, F. Dunfeild, L. Phillips, L. Krewski, D. Vanderhyden, B. 2008).

The presence of genetic factors like BRCA-1, BRCA-2 genes is suggestive of a predisposition for ovarian cancer and these patients are candidates for screening. Screening is done by detecting the carcinoembryonic antigen-CA 125. Transvaginal pelvic ultrasound with color Doppler and serum CA125 is preformed every 6 months to screen for cancer. (Russo, A., Calò, V., Bruno, L., Rizzo, S., Bazan, V., & Di Fede, G. 2009). Patients testing positive for the gene dispositions may elect to have salpingo-oophorectomy instead of following the screening protocol since these candidates are likely to get the disease.

There are agents, which help protect the body against carcinogenesis in ovaries. Progesterone is one hormone, which is helpful, and women taking progesterone are less likely to develop ovarian carcinoma. Other drugs that protect against tumor genesis and malignant transformation are fertility drugs, and hormone replacement therapies. Protective foods are; Beans, lentils, olive oil, vegetable oil, fish, peas and vegetables. (Saleli, F. Dunfeild, L. Phillips, L. Krewski, D. Vanderhyden, B. 2008).

**Definition and Incidence**

These tumors originate from the layer of cells that cover the surface of the ovary. It is the second most common gynecologic malignancy in the United States with a five-year survival rate of forty-six percent. Advanced disease is without any symptoms and two-thirds of
patients have tumors that have already spread beyond the pelvis at the time of diagnosis. (Aagaard, K. Tillery et.al. 2008).

Figure 1 and 2; these images show a left adnexal mass on ultrasound seen as a complex mass with posterior acoustic enhancement. Edge shadows show the rounded contour of the mass where the sound waves curve. CT scan of the patient showed an enlarged right ovary that was not seen on the ultrasound. The dimensions of the tumor on the right ovary.

Figure 3: Internal flow of the cystic lesion is seen to be of low resistance quality. The wave pattern of the flow shows a low resistance flow, which is normally seen in malignant tumors, this image shows that there is internal flow to the mass. Note: retrieved November 23rd 2009 from http://images.google.com/imgres?imgurl

Benign cystadenoma is similar in appearance to malignant cyst adenocarcinoma. Both the tumors appear as cystic masses in the adnexa. These masses show septations inside the cysts when scanned with ultrasound. The thickness of these septations is important to rule out malignancy. The thickness of 3mm is considered benign. Any septations over three mm should be considered with the suspicion of cancer. Images in Figures 4 and 5 show how similar the benign tumors look to the malignant tumors on ultrasound. (Aagaard, K. Tillery et.al. 2008).
Diagnosis according to symptoms and signs

According to Current Management Strategies journals, the symptoms are nonspecific, until the tumor has spread excessively. Symptoms include fullness, pain and discomfort in abdomen, changes in bowel habits, dyspepsia, early satiety, bloating, bowel obstruction, breathlessness due to pleural effusion, mass with irregular contour, and palpable nodes. (Kawamoto, S. Urban, B. Fisherman, F. 1999).

Complications

**Pseudomyxoma Peritonei;** A complication of mucinous tumors, pseudomyxoma peritonei it is characterized by gelatinous material filling the peritoneal cavity, typically due to a ruptured mucinous cystadenocarcinoma or cystadenoma of the ovary or appendix. The CT appearance of pseudomyxoma peritonea is distinctive: there are diffuse intraperitoneal hypo-attenuating materials that may contain septa and cause scalloping of the liver or splenic margin. Enhancement of the septa or the margins of each tumor nodule may be seen on contrast-enhanced images. The walls of the septa may contain calcifications. (Aagaard, K. Tillery et.al. 2008).

**Hematogenous spread causes metastasis;** metastasis is seen in the liver after the tumor spreads. This is the likely stage of presentation of this tumor.
Lymphatic spread: Lymphatic spread is considered to occur in stage five disease and is treated by chemotherapy. The lymphatic drainage of the ovaries parallels the gonadal veins and terminates in the paraaortic and pericaval lymph nodes at the level of the renal vessels, metastases are most frequently detected in these regions. Lymph node channels also pass laterally to terminate in the lymphatic vessels of the pelvic side-wall, including external iliac, obturator, and hypogastric chains. (Aagaard, K. Tillery et.al. 2008).
A short-axis diameter of more than 1 cm is used as the CT criterion for malignant lymph nodes in the abdomen and pelvis, with a reported accuracy of 88% in ovarian cancer. (Aagaard, K. Tillery et.al. 2008).

**Peritoneal spread** After cancer penetrates the ovarian capsule, malignant cells seed into the peritoneal cavity. Common sites for peritoneal spread are; posterior cul-de-sac, the infundibulopelvic ligaments, the omentum, the right paracolic gutter, and the undersurface of the right hemidiaphragm. Spread within the peritoneum can be seen along the surface of the peritoneum or within the ligaments. (Aagaard, K. Tillery et.al. 2008).

On CT scan, signs of tumor extension in the pelvic organs include; a localized deformation of the uterine contour, and a rough interface between the tumor and the myometrium. Signs of severity of the disease are; a decrease in the distance between the tumor and the pelvic sidewall of less than 3 mm and iliac vessels surrounded by or displaced by the tumor. There is loss of a tissue plane between the solid component of the tumor and the wall of the sigmoid colon or the bladder, and there is an encasement of the sigmoid colon by the tumor or direct tumor extension to the sigmoid colon. (Aagaard, K. Tillery et.al. 2008).

**Stages and survival of ovarian cancer**

**Stage-1;** confined to the ovary, 5-year survival rate is 80%. **Stage-2;** contralateral ovarian involvement, 5-year survival is 50%. **Stage-3;** both ovaries involved but cancer confined to pelvis, 5-year survival rate is 30%. **Stage-4;** ovaries, pelvis and abdomen are involved. 5-year survival is 8%. **Stage-5;** metastasis through blood, lymph and peritoneum occurs. Survival is not good. (Jianguang, J. Asta, F. Jan, S. Lenner, Per. Hemminki, Kari.2008).

**Treatment and Chemotherapy**

Early stage disease is treated with percutaneous radiofrequency ablation, a procedure that uses a high frequency electric current to kill tumor cells. This is effective in achieving local control in selected patients with metastasis from ovarian cancer. Peritoneal washing is done for peritoneal spread. Advanced stage disease is treated with cytoreductive debulking of tumor; this is removal of all tumors one cm or more. A younger patient, who is of early-stage diagnosis, and has future childbearing prospects, conservative surgery is done. Preservation of the uterus, the contralateral ovary, and in some cases the ipsilateral ovary, is offered. Early stage or stage-1 has
90% survival rates with chemotherapy. Advanced stage has a 30% survival rate with chemotherapy. (Aagaard, K. Tillery et al. 2008).

**References**


*Images* Note: Retrieved November 7th 2009 from http://images.google.com/images?