CLINICAL VIGNETTE

Extraovarian Pelvic Yolk Sac Tumor with Hepatic Metastasis: Case Report

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Introduction

Yolk sac tumors (YST), a type of germ cell tumor, represent 1% of all ovarian malignancies and 20% of malignant ovarian germ cell tumors.[1] In adult patients, yolk sac tumors tend to be mixed cell type, and present in the second to third decade of life.[2] Age of median presentation is between 18 to 25 years, with ovaries being the most common primary site of development. Although rare, 10% originate from extragonadal sites such as mediastinum, vagina, brain, retroperitoneum, and female genital tract.[3,4] In patients of childbearing age, preservation of fertility is usually given high consideration when developing treatment plans.[5] Therefore, accuracy in detection, diagnosis, and staging is imperative for optimal management.[6,7]

Extraovarian YST with pelvic localization is extremely rare with a total of 10 cases previously reported.[2,8-10]

Case Report

A 38-year-old woman presented with one week of abdominal pain, radiating to the back and groin. She also reported abnormal vaginal bleeding and decreased appetite, nausea, constipation and intermittent dysuria. Past medical history was significant for abnormal pap smear, nephrolithiasis, interstitial cystitis, chronic pelvic pain, and hypertension. Previous surgical history included urethral stent placement and removal and bladder hydrodistension. She was not taking any medications prior to admission and reported allergy to Penicillin. She was a former smoker and did not drink alcohol or use recreational drugs. Family history only included paternal hypertension.

Vitals at presentation were temperature 36.8 °C, blood pressure 159/109, heart rate 99 bpm, respiratory rate 16 bpm, and an oxygen saturation of 99%. Physical exam was significant for soft nontender abdomen with right upper quadrant tenderness to palpation without guarding. Laboratory studies were significant for elevated ALT 70 U/L, AST 75 U/L, ALK PHOS 312 IU/L. Other labs included elevated CEA 11.3 ng/ml, AFP 458 ng/ml, with normal beta hcg of 3 ng/ml.

Contrast CT scan of abdomen and pelvis revealed multiple hypo-vascular liver masses measuring up to 8.6 cm with diffuse intrahepatic biliary dilation due to mass effect. There were large pelvic masses in the cul-de-sac inseparable from the sigmoid colon, measuring 6.1 x 2.9 cm and cervical soft tissue fullness.

The patient was admitted to medicine with interventional radiology and gynecology consults.

Ultrasound guided needle biopsy of the liver masses demonstrated a high-grade malignant neoplasm characterized by predominantly solid growth pattern with focal reticular microcystic architecture with intra and extracellular eosinophilic deposits with suspected hyaline bodies. The tumor cells demonstrated large pleomorphic nuclei with single to multiple conspicuous nucleoli and moderate amount of clear amphophilic cytoplasm, along with numerous mitosis present. The biopsy demonstrated positive IHC staining for Glypican-3, SALL4, weak Keratin 7, CDX2, pankeratin, PAX8, and p16. These immunohistology findings are supportive of yolk sac tumor. The patient underwent C1 BEP, C2 BEP, and 1 cycle paclitaxel and ifosfamide.

After initial treatment, the patient was discharged on lidocaine patch, lorazepam, methocarbamol, menthol, metoclopramide, olanzapine, ondansetron, oxycodone, pantoprazole, polyethylene glycol, prochlorperazine, docusate, and oxybutynin. Follow up with gynecology was scheduled.

Three months after discharge she was readmitted with disease progression.

Patient reported increased fatigue and worsening abdominal pain after presenting with nonproductive cough, nausea, vomiting, and lightheadedness. She was in moderate discomfort with oral thrush. Abdomen was hard, mildly distended, with right quadrant tenderness to palpation with normal bowel sounds and diffuse palpable masses. She was febrile and met 3 of 4 SIRS criteria for sepsis with leukocytosis of 25. Repeat CT scan of abdomen and pelvis revealed increase in size and number of hepatic masses, increased size of pelvic nodules and dominant pelvic mass. There was loss of fat plane in the sigmoid colon. CT scan of chest demonstrated small centrilobar nodularity within left posterolateral lung base likely due to infection. Labs included ALT elevated to 379 U/L, AST 1066 U/L, ALK PHOS 591 IU/L, total bilirubin 4.9 mg/dL, sodium

128 mEq/L, chloride 86 mEQ/L, and BUN 33 mg/dL. Patient received 1 cycle of pembrolizumab. Unfortunately, she continued to deteriorate and died in the hospital three months after initial presentation.

Discussion

Of the germ cell tumors, yolk sac tumors are the second most common.[2] YST derived from extraovarian sites such as the vagina, uterus, or pelvis are very uncommon.[11] More than 56 cases of primary vaginal YST have been reported, but most in patients 3 years or younger.[12] Primary endometrial YST have 29 reported cases.[11] YST of pelvic origin have only 11 cases reported, including this report. Yolk sac tumors are highly malignant, often spreading though the blood and lymphatics. In our case, early metastases were detected in the liver and regional lymph nodes. Of the ten previously reported cases of pelvic YST, six reported extra pelvic metastases.[8]

Yolk sac tumors are diagnosed by immunohistochemistry and express two proteins, alpha-fetoprotein and beta subunit of human chorionic gonadotropin.[13] Yolk sac tumors are usually treated with unilateral or bilateral salpingo-oophorectomy and with consideration of total abdominal hysterectomy, in addition to chemotherapy.[7] Of the 29 reported extraovarian cases, 16 were treated with surgery, with 13 total abdominal hysterectomies with either unilateral or bilateral salpingo-oophorectomy. Eleven of the 26 of cases received BEP as adjunct chemotherapy. Thirteen of the 27 had no recurrence, at time of follow up with 8/27 cases dying from the disease.[11] One 28-year-old with pelvic YST, had a necrotic mass in the cul-de-sac region.[10] She was treated with total abdominal hysterectomy with bilateral salpingo-oophorectomy, omentectomy, and removal of the cul-de-sac mass. After surgery the patient received vincristine, dactinomycin, cyclophosmide, etoposide, and cisplatin. This patient's pathology reported unremarkable uterus, fallopian tubes, and ovaries. Unfortunately, she had recurrence detected by a rise in AFP and died 14 months later. While pure YST and some extraovarian tumors can be successfully treated with surgical resection and adjunct chemotherapy, success rates for pelvic YST are lower with 50% mortality of the 10 cases with pelvic YST who received surgical resection and/or adjunct chemotherapy.[8]

Conclusion

This 38-year-old female with a rare extraovarian yolk sac tumor was unsuccessfully treated with BEP combination therapy. Diagnosis of germ cell tumor, most likely of yolk sac origin was established with Ultrasound guided fine needle aspiration and immunohistochemistry that the tumor metastasized to liver and regional lymph nodes with pelvic mass inseparable from sigmoid colon. Benefit of Adjunct surgical resection remains unclear in these rare cases of pelvic YST. Our patient received BEP therapy which has strong evidence supporting treatment for gonadal and extragonadal YST. With many extragonadal YST patients receiving resection surgery, it is uncertain if our patient would have benefited from cul-de-sac tumor removal prior to BEP chemotherapy. Survival rates of YST have been highly correlated to staging. Our patient's advanced stage with YST metastasized to the liver was likely the main contributing factor to unsuccessful treatment.

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