OVARIAN DYSGERMINOMA IN TWO SISTERS

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على الرغم من ندرة حدوثها إلا أن حالات الورم الجرثومي الغامض تعتبر مهمه بصرف النظر عن مدى حدوثها لأنها تؤثر في النساء اللائى في سن الإنجاب (أي أقل من خمسه وأربعين عاماً). تشكل حالات الورم الجرثومي الغامض ثلثي حالات أورام المبيض الخبيثه في النساء اللائي تقل أعمارهن عن عشرين سنة. ينظر إلى جميع حالات الورم الجرثومي الغامض على انها خبيثه غير انه فعليا فقط ثلث الحالات تكون خبيثه.
لم يتم حتى الآن تحديد السبب المرضي الحقيقي للأورام الجرثومية الغامضة. عند مراجعة الأدبيات كان هناك القليل من التقارير حول مدى حدوث حالات الورم الجرثومي الغامض وأورام الخلايا الجرثوميه الأخرى في الأسر؛ وأن بعض هذه التقاريرقد ركزت على الشذوذ الجيني المرتبط بأورام الخلايا الجرثومية ومحاولة التعرف على الجين (المورث) المسؤول. في هذا البحث تم عرض حالتين للورم الجرثومي والصور الشعاعية اللتين تم تشخيصهما في شقيقتين تبلغان من العمر أربعة عشر وتسعة عشر عاماً.
التوصيات:
1 - الكشف المبكر عن المرض.
2 - عمل الفحوص الإشعاعية اللازمة لتحديد حجم الورم وانتشاره ومدى تأثيره على الأعضاء المحيطة.
3 - سرعة تحويل المريض إلى مركز متخصص لتلقي العلاج اللازم حيث إن استجابة الورم للعلاج الكيميائي تعتبر جيده.

الكلمات المرجعية: الورم الجرثومي الغامض , الأورام الجرثومية , الإصابة في الأسر, صور الأشعة.

Although rare, dysgerminomas are important irrespective of incidence because they affect women of reproductive age (i.e., <45 years). Dysgerminomas make up two thirds of all malignant ovarian neoplasms in women younger than 20 years. All dysgerminomas are considered malignant, but only one third of dysgerminomas behave aggressively. Their exact etiology has not been determined. Few reports are found in the review of the literature on the incidence of dysgerminoma and other germ cell tumors in families. Some of these reports focus on the genetic abnormalities associated with germ cell tumor and the responsible gene. Two cases of dysgerminomas diagnosed in two sisters aged 14 and 19 years old are presented here with their radiological studies.

Key Words: *Dysgerminoma, Germ Cell Tumor,Familial incidence,Imaging.*

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INTRODUCTION

Ovarian cancer in the pediatric age group is rare. The North American Association of Central Cancer Registries reported in the period from 1992 to 1997 more than 1.6 million females with the diagnosis of cancer. Of these, 67,746 were ovarian cancers, 1563 (or 2.3%) of which occurred in patients younger than 25. Close to 50% (780 cases) were reported in women aged 20 to 24, 481 cases in the 15- to 19-year-old group, and 302 cases in the neonates to the 14-year-old group.[1]

The three major types of ovarian tumors are epithelial, sex cord, and germ cell. Epithelial cell tumors represent the majority of all ovarian neoplasms (82%).Conversely, germ cell tumors

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(GCTs) are rare, comprising approximately 20% of all ovarian tumors, both benign and malignant. Approximately 3-5% of ovarian GCTs are malignant. The most commonly occurring GCT is the dysgerminoma, which accounts for only 1-5% of all ovarian cancers.[2-6]

In the literature search using Pubmed, Midline search and Google, some reports on the incidence of dysgerminoma in families were found. However, the exact incidence is still unknown. I am presenting two cases of dysgerminomas diagnosed in two sisters aged 14 and 19 years.

CASE REPORT

The first patient is a 14-year-old Saudi single female who presented at the Emergency Department with a prolonged history of pelvic and lower abdominal swelling associated with a dull pelvic pain and anorexia.

Physical examination revealed huge abdomenopelvic mass with mild tenderness over pelvis and lower abdomen. On inspection, the external genitalia were found to be normal. The patient was referred for ultrasound examination and the study (Not Shown) revealed a large mass measuring 12x16 cm arising from the right adnexa with upward extension into the abdomen. It was predominantly solid with central anechoic area due to central necrosis. The uterus and urinary bladder were compressed and displaced. Both ovaries were not visualized. Fluid was seen within cul-de-sac. Color doppler examination showed increased vascularity of the mass. Ultrasound examination of the abdomen showed bilateral dilatation of pelvicalyceal system and upper ureters consistent with bilateral hydrouretro-nephrosis.

Magnetic resonance imaging (MRI) of the pelvis (Figure 1) showed a large encapsulated mass arising from right adnexa with upward extension into abdominal cavity displacing and compressing both uterus and urinary bladder anteriorly and inferiorly. The mass was non-homogeneous with predominantly intermediate signal intensity in proton density images, and contained multiple cystic spaces representing previous tumor hemorrhage. No calcification or fatty component were identified. No enlarged lymph nodes were seen within the abdomen or pelvis. There was no invasion to adjacent structures.

Intravenous urography (Figure 2) showed bilateral laterally displaced and dilated ureters with bilateral hydronephrosis.

The patient was operated on and the treatment consisted of simple right salpingo-oophorectomy followed by adjuvant radiotherapy and chemotherapy. No metastasis to adjacent structures was identified during surgery. The patient had an uncomplicated post-operative course. Examination of the surgical specimen revealed pure dysgerminoma (stage one A) arising from the right ovary.

The follow-up of thirty months confirmed that the patient was in good health with normal ultrasound and laboratory results.

Two years later, her sister presented at the age of 19 with lower abdominal mass, mild pain and dysmenorrhea. Physical examination showed a palpable mass in the lower abdomen and pelvis with mild tenderness. The patient was referred to the Radiology Department where ultrasound, computerized tomography (CT) scan (Figures 3 and 4) and MRI were done. The imaging features

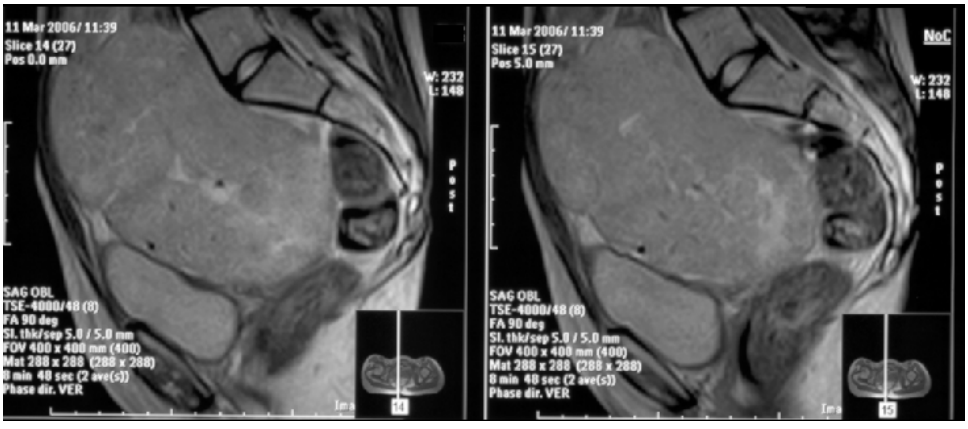

Figure 1 *- Patient One. Two consequent saggital proton density MRI of the pelvis showing a large mass arising from adnexa with upward extension into abdominal cavity. The mass appears of intermediate signal intensity with multiple internal foci of high signal intensity. Mass effect on adjacent structures such as the uterus, urinary bladder and rectum is seen.*

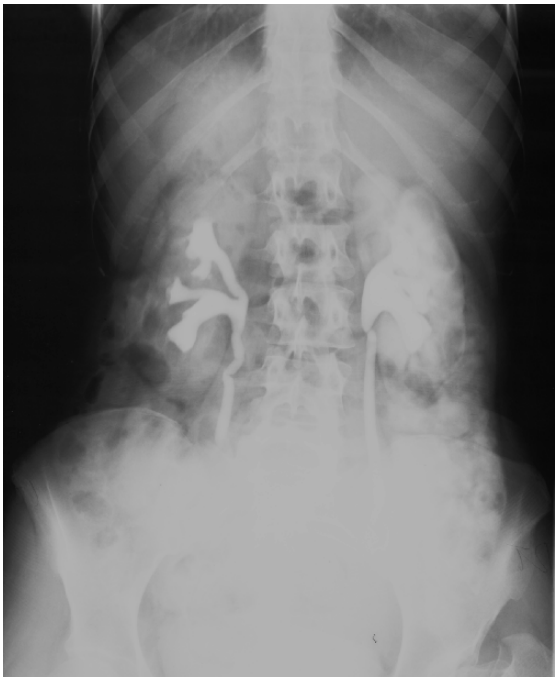

Figure 2 *– Patient One. Single film of IVP series showing lateral deviation of both pelvic ureters by a large pelvic mass with bilateral hydronephrosis.*

of the mass were almost the same as in the first patient. The patient was operated on and the mass was found to have arisen from the left ovary with no macroscopic invasion of surrounding structures. A simple left salpingo-oophrectomy was done followed by radiotherapy and chemotherapy. There has been no follow-up till date.

DISCUSSION AND CONCLUSION

Malignant germ cell tumors are more frequent in young patients. The most common subtypes are dysgerminoma, immature teratoma, and endodermal sinus tumor. Dysgerminoma is an equivalent of seminoma in male patients. Patients present with a unilateral, predominantly solid mass with varying degrees of necrosis and hemorrhage. Nodal metastases are more frequent than peritoneal disease. The patients are treated with unilateral salpingo-oophorectomy and chemotherapy.[7,8] Dysgerminomas are bilateral in 10-35% of cases. Five percent occur in phenotypic females with abnormal gonads. They may have a 46XY karyotype with pure gonadal dysgenesis or androgen insensitivity syndrome, or they may have a 45X, 46XY karyotype with mixed gonadal dysgenesis.[9,10]

In patients with a known or suspected adnexal mass, ultrasound is highly accurate in the assessment of the location of the tumor (e.g., differentiation of uterine from adnexal masses) and in distinguishing between a benign and malignant adnexal lesion. The optimal use of ultrasound requires the analysis of morphologic features and doppler findings.[11-14] Ovarian masses with septations greater than 3 mm, mural nodularity, and papillary projections suggest the diagnosis of malignant ovarian neoplasm.[15-17] The most significant feature is the presence of solid components within an ovarian mass,[18] Other features suggesting malignant etiology include vascular septations thicker than 3 mm, septal nodularity, and single or multiple enhancing solid components within a cystic mass.[19,20] Necrosis within a solid lesion is also a strong indicator of malignancy. In our cases, many of these features such as solid components, central necrosis, heterogeneity, free fluid and central increased vscularity were present.

Color and pulsed doppler techniques may aid diagnosis of ovarian cancer. Central color Doppler flow within solid components of an ovarian mass has been shown to be an accurate predictor of malignancy.[18,21,22] Brown and colleagues[18] studied 211 adnexal masses, including 28 malignancies to determine the best discrimination between benignity and malignancy by gray-scale and doppler. A nonhyperechoic solid component within a mass, central blood flow on color doppler imaging, free intraperitoneal fluid, and septations within a mass had 93% sensitivity and 93% specificity for diagnosis of malignancy.

In a setting of sonographically indeterminate adnexal masses, MR imaging is used as a problem-solving tool. The main advantage of MR imaging is that it can provide tissue characterization based on signal properties.[23]

For adequate evaluation of adnexal masses on MR imaging, T1-weighted and T2- weighted images are fundamental in the delineation of pelvic anatomy and tumor. Fat-saturated T1-weighted images help to distinguish between fat and hemorrhage. Gadolinium-enhanced T1-weighted images help to characterize the internal architecture of cystic lesions and improve the detection of solid components.[24,25] MR imaging has been shown to be superior to doppler ultrasound and conventional CT in the diagnosis of malignant ovarian masses [the estimated area under receiver operating characteristic curve (AUC) was 0.78 for ultrasound, 0.87 for CT, and 0.91 for MR imaging].[26] Although CT has not

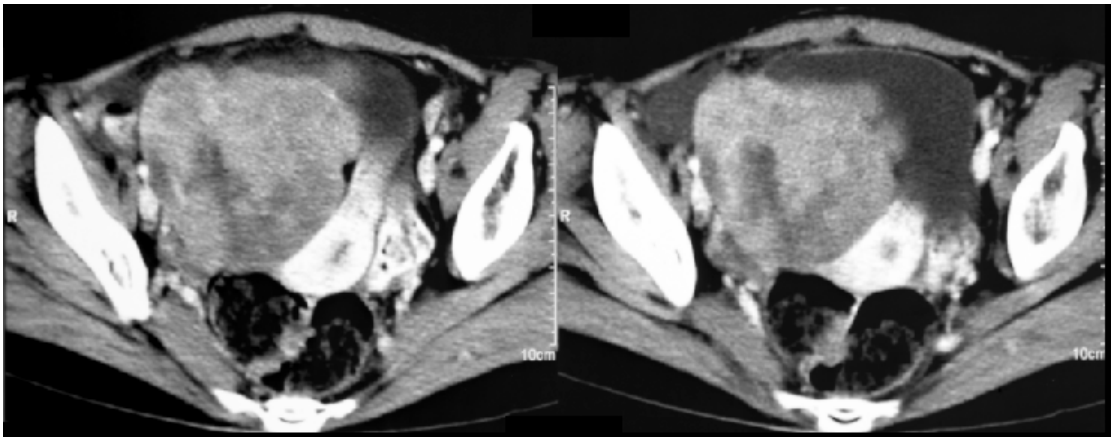

Figure 3 *– Patient Two. Two consequent contrast enhanced axial CT scan images of the pelvis showing irregular heterogeneously enhancing mass arising from left adnexa with upward extension. The uterus is displaced by the mass to the left.*

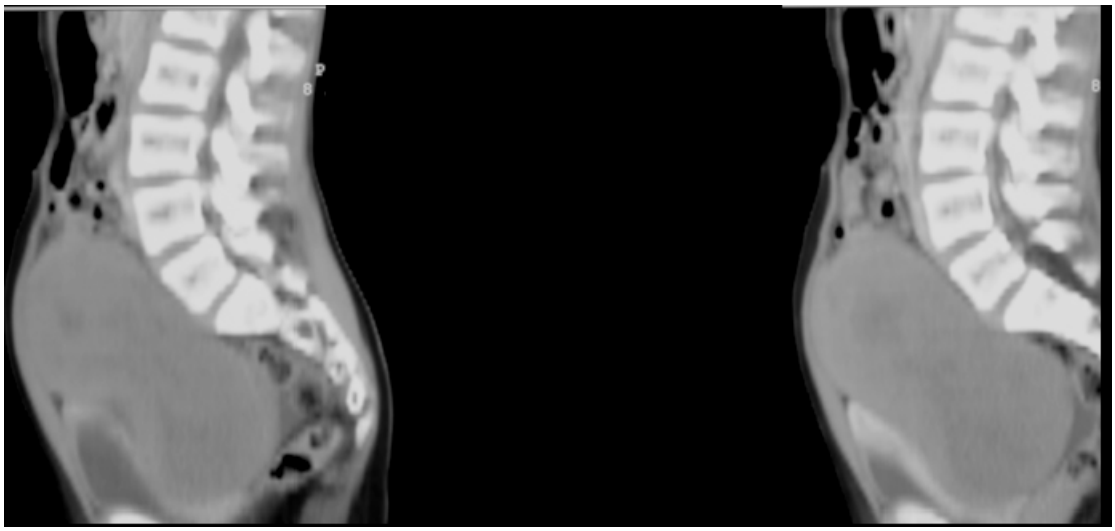

Figure 4 *– Patient Two. Two sagittally reconstructed CT scan images showing a large mass arising from the pelvis, displacing the urinary bladder and uterus anteriorly and inferiorly. The mass appears isodense to the muscles and contains multiple areas of low densities representing cystic changes.*

traditionally been used in the characterization of an adnexal mass, studies have shown that the utility of thin-section multislice CT is equivalent to that of ultrasound. CT characterization of adnexal mass relies on the depiction of morphologic features of enhancing mural nodularity or heterogeneity and necrosis within a solid lesion. Ancillary findings, such as ascites and peritoneal carcinomatosis on ultrasound, CT, or MR imaging are strong indicators of a malignant etiology for an adnexal mass.

Several cases of families with both males and females diagnosed with germ cell cancers have been documented. The low incidence of ovarian germ cell cancers suggests that multiple occurrences in the same family may not be due to chance. Rather, it is possible that a gene that confers susceptibility to ovarian germ cell cancers, and possibly to germ cell tumors in males as well, is present in at least some of these families.[27]

The primary goal of radiologic assessment is the differentiation of malignant tumors from benign tumors, rather than determination of histologic subtype. Sometimes, it is possible, however, to suggest the histologic subtype of an epithelial neoplasm based on particular imaging features.

I would like, in conclusion, to recommend an early diagnosis. With the availability of recent imaging techniques, a full radiological investigation could be done to search for metastasis, evaluate the adjacent organs, and give

an early referral to the Oncology Center since the tumor is chemo-sensitive.

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