Clinicopathological Study Of Primary Malignant Ovarian Tumors

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ABSTRACT

Background: Ovarian cancer is third gynecologic cancer after uterine and cervical cancer . It is heterogeneous disease with different in clinical features and outcome. It is a group of many subtypes with variation in biological features that lead to differences in response to treatments, survival and recurrence rates.

Aim: This study aims to detect the frequency of histological types of primary malignant ovarian tumors and to find it's clinicopathological correlation.

Subject and Methods: The retrospective cross sectional study done from 1st of July 2020 to 1st August 2020 on data of forty cases of primary malignant ovarian tumors who were diagnosed during the last three years (from 2017 to 2020) in Mosul hospitals labs and private labs.

Results: Two thirds of cases 72.5% were surface epithelial tumors , followed by germ cell tumors 15% and sex cord-stromal tumors 12.5% .The serous cystadenocarcinoma was the most common histological type in this study .About one third of the cases 30 %were seen in 51–60 years of age group, most of tumors unilateral with solid cystic in nature .The largest diameter shows in mucinous adenocarcinoma . Pelvic mass was the most presenting sign of ovarian cancer .

Conclusion: Malignant surface epithelial tumors comprises the most common type of ovarian cancer and of which serous carcinoma considered the main subtype followed by mucinous cystadenocarcinoma . Advancing age increased the possibility of malignant transformation and most of cases occur over 50 years old especially the cases of surface epithelial type , most of tumors unilateral with solid cystic in nature , pelvic mass was the most presenting sign of ovarian cancer .

Keywords: Ovarian cancer , Tumors , Cyst .

دراسة العلاقة المرضية السريرية لأورام المبيض الخبيثة الاولية

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الخلاصة

الخلفية : سرطان المبيض هو ثالث سرطان نسائي بعد سرطان الرحم وسرطان عنق الرحم. وهو مرض غير متجانس له سمات ونتائج سريرية مختلفة. إنها مجموعة من الأنواع الفرعية مع اختلاف في السمات البيولوجية التي تؤدي إلى اختلافات في الاستجابة للعلاجات ومعدلات البقاء والتكرار.

أهداف البحث : تهدف هذه الدراسة الى معرفة مدى تكرار الانواع المختلفة لأورام المبيض الخبيثة الاولية و دراسة العلاقة المرضية السريرية .

مواد وطرق البحث : هذه الدراسة اجريت بأثر رجعي خلال الفترة من الأول من تموز (يوليو) ٢٠٢٠ إلى الأول من آب (أغسطس) ٢٠٢٠ على بيانات أربعين حالة من أورام المبايض الخبيثة الأولية التي تم تشخيصها خلال السنوات الثلاث الماضية (من ٢٠١٧ الى٢٠٢٠) في مختبرات مستشفيات مدينة الموصل والمختبرات الخاصة .

النتائج : ثلثي الحالات ٧٢.٥% كانت اورام ظهارية سطحية , تليها اورام الخلايا الجرثومية ١٥% واورام الحبل السري الجنسي ١٢.٥% . سرطان الغدد الكيسية المصلي كان النوع الاكثر شيوعا في هذه الدراسة . حوالي ثلث الحالات ٣٠% شوهدت في الفئة العمرية ٥١-٦٠ سنة ، معظم الأورام كانت أحادية الجانب ذات طبيعة كيسية صلبة ، أكبر قطر يظهر في الورم الغدي المخاطي ، كانت كتلة الحوض هي العلامة الأكثر ظهورًا لسرطان المبيض.

الاستنتاج : تشمل الأورام الظهارية السطحية الخبيثة النوع الأكثر شيوعًا من سرطان المبيض والذي يعتبر سرطان المصل هو النوع الفرعي الرئيسي يليه سرطان الغدد المثانية المخاطي. تقدم العمر يزيد من احتمالية حدوث تحول خبيث ومعظم الحالات تحدث فوق سن الخمسين وبالأخص حالات النوع الظهاري السطحي . معظم الأورام أحادية الجانب ذات طبيعية كيسية صلبة , كانت كتلة الحوض هي اكثر علامات الإصابة بسرطان المبيض.

الكلمات المفتاحية : سرطان المبيض ، الاورام ، كيس .

INTRODUCTION

Ovarian cancer is the seventh most common cancer among women in the world and third gynecologic cancers after uterine and cervical cancer [1,2]. The risk of ovarian cancer increases in women who have ovulated more over their lifetime, this includes those who begin ovulation at a younger age and reach menopause at an older age . Other risk factors include genetic factors ,hormone therapy after menopause , fertility medication ,nulliparous and obesity [3,4]. On other hand factors that may additionally lower hazard of this cancers include hormonal birth control agents and breast feeding [5].The five-years survival rate of the patients with early stage diseases approaches 90% , but most of the cases are diagnosed late so the survival rate will fall to 45% for 5 years [6].

Classification: The classification of ovarian tumors based on morphologic and cytologic features of the tumor cells. The ovary contains four major types of tissue. These four tissue types are :Epithelium , Germ cells, Sex cords, Ovarian stroma , specialized and nonspecific [7,8] .

Epithelial Tumors: Epithelial tumors are the most important group of neoplasms , they have been thought to derive from the ovarian surface epithelium and thus referred to as “surface epithelial” tumors [9].Epithelial ovarian tumors are subclassified based on cell type as **serous, mucinous , seromucinous, endometrioid , clear cell** or **transitional (Brenner)** [10].

Serous carcinoma: Serous carcinoma is the most common histological subtype, accounting for >70% of all ovarian epithelial carcinomas and most occur in adults [11,12] .Low- grade less common and arising in many cases from a serous borderline tumor,while high-grade serous carcinoma actually arise from the epithelium of the distal fallopian tube [13,14].

Mucinous carcinoma: This tumor accounts for 3–4% of all primary ovarian carcinomas, the mean age at presentation is 45 years [10]. Metastasis from other sites such as the appendix ,stomach, colon must be considered in the differential diagnosis of primary mucinous carcinoma [15].

Malignant Germ Cell Tumor: Malignant germ cell tumors are relatively rare , they account less than 10% of all ovarian cancer [16] . Types: Immature teratoma , Dysgerminoma, Yolk sac tumor (endodermal sinus tumor), Embryonal carcinoma, Non gestational Choriocarcinoma , Mixed malignant germ cell tumors [17].

Dysgerminoma : These tumors account for about 2% of ovarian cancers with peak incidence below the age of 20 years [8,18] .

Immature Malignant Teratomas :Immature teratoma represents 1% of all ovarian cancers and 20% of malignant ovarian germ cell tumors , they differ from benign teratomas in that the component tissues resemble embryonal and immature fetal tissue [19,20].

Yolk sac tumor: Although it is rare, yolk sac tumor still ranks as the second most common malignant germ cell tumor . Most common in childhood and adolescence [8].

Sex Cord–Stromal Tumors: Sex cord–stromal tumors comprise approximately 5% of all ovarian neoplasms. These tumors differentiate in the direction of sex cords and/or the specialized ovarian stroma [21].

Granulosa cell tumor: Granulosa cell tumor is the most common sex cord-stromal tumors [22]. These tumors are composed of cells that resemble granulosa cells of developing ovarian follicles.

They are divided into adult and juvenile granulosa cell [23]. **Malignant Fibromas, Thecomas, and Fibrothecomas** are extra-ordinarily rare. These tumors arising in the ovarian stroma that are composed of either fibroblasts (fibromas) or spindle cells with lipid droplets (thecomas) [24].
Sertoli-Leydig Cell Tumors : Sertoli-Leydig cell tumors accounting for < 0.5% of all primary ovarian neoplasms , mean age of patients 25 years [25].

AIMS OF THE STUDY

1. To study the frequency of histological types of primary malignant ovarian tumors.
2. To study clinicopathological correlation of different subtype of primary malignant ovarian tumors.

SUBJECTS AND METHODS

The retrospective case series study done from 1st of July 2020 to 1st August 2020 on data of forty cases of primary malignant ovarian tumors who were diagnosed during the last three years (from 2017 to 2020) in Mosul hospitals labs and private labs.The data were collected from reports with relevant information about age, clinical presentation, size of tumor, bilaterality and histopathological analysis.

RESULTS

Out of forty cases, one third of the cases 30 %(*n* = 12) were seen in 51–60 years of age group followed by 11 cases (27.5%) in 41–50 years of age group .The youngest case in the presenting study was a 10 year-old female as shown in figure 1.

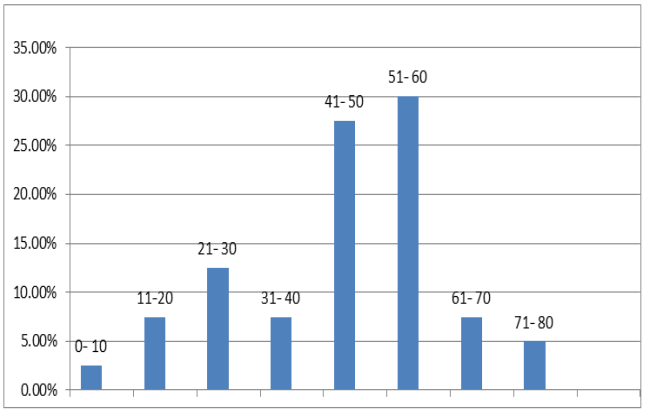


Figure 1: Age distribution of women with primary malignant ovarian tumors

Ovarian Cancer Variables

The presenting signs and symptoms of patients in this study was divided depending on the history taken from the data as shown in the table 1 .

Table 1 : The presenting signs and symptoms of the primary malignant ovarian tumors.

Presenting signs & symptoms	Number of patients	Percentage
Pelvic mass	17	42.5%
Ascites	14	35%
Lump in abdomen	5	12.5%
Incidental finding	4	10%
Total	40	100%

In this study the number of patients that had metastasis at time of diagnosis were15 cases (37.5%).

Laterality of Ovarian Cancer

In the presenting study 45% of cases were involved in the right ovary (*n* = 18) which were slightly more than left ovary 37.5% (*n* = 15) as result 82.5% of cases were unilateral (n=33) and only in seven cases both the ovaries were involved , as shown in figure 2.

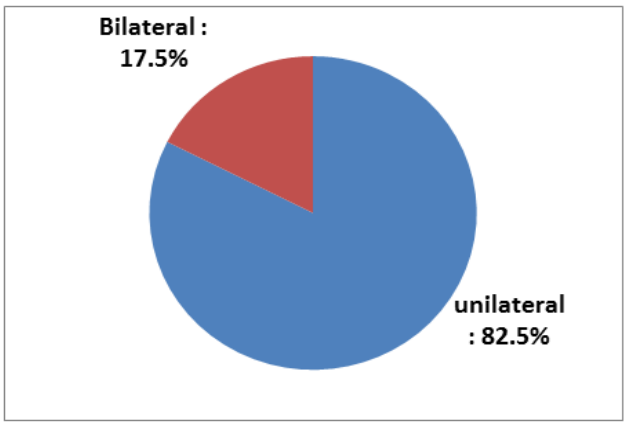


Figure 2: Laterality of ovarian c ancer

Pathological Features :

Grossly : regarding the size ranges of ovarian cancer, Out of forty cases , 23 cases (57.5%) were more than 10 cm while 17 cases(42.5%) were <10 cm ,the largest diameter show in mucinous adenocarcinoma .

Tumors with solid/cystic in nature were found in 20 cases (50%) While 11cases (27.5%) were purely cystic and other 9 cases (22.5%) were solid in nature.

Microscopically : Most of cases (*n* = 29) 72.5% were surface epithelial tumors, followed by germ cell tumors (*n* = 6)15% and sex cord stromal tumors (*n* = 5)12.5%.

The serous cystadenocarcinoma was the most common tumor account for two-third of surface epithelial type (23 cases) as shown in figure 3. Of 23 cases, only two cases low grade while 21 cases were high grade serous cystadenocarcinoma and their histological features as shown in figure 4. There were five cases of surface epithelial tumors diagnosed as mucinous adenocarcinoma ,two cases (out of five) were well differentiated and three were moderately differentiated. Only one case was diagnosis as well differentiated Seromucinous carcinoma. Most cases of surface epithelial type were high grade and only five cases were low grade according to FIGO grading system [8] as shown in table 2.

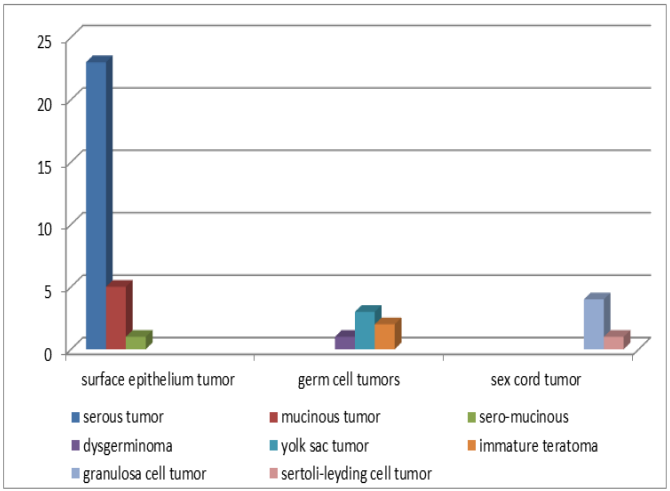
Table 2: Grading of malignant surface epithelial tumors

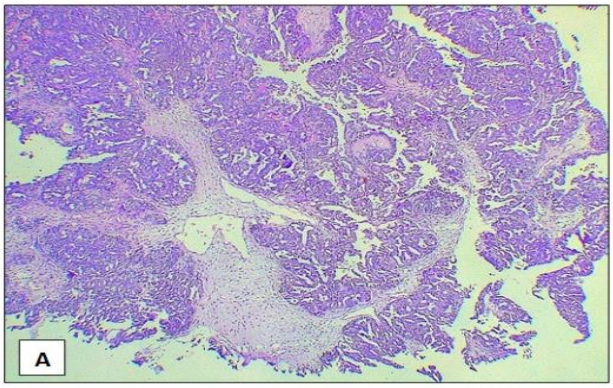
Grade	Frequency (%)
1	5(17.2)
2	3(10.3)
3	21(72.4)
Total	29(100)

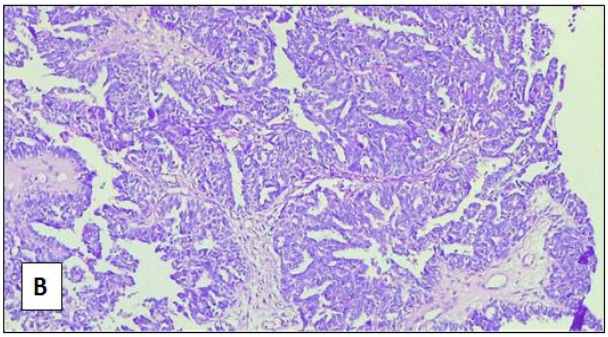
Six cases diagnosed as germ cell tumors, one was dysgerminoma , three were yolk sac tumor and two cases were immature malignant teratoma . Dysgerminoma constitutes only 2.5% of primary ovarian malignancy while immature malignant teratoma account 5% .Yolk sac tumor account (7.5%) of the cases and the histological features shown in figure 5.

Five cases were diagnosed as sex cord stromal tumors . Four cases were adult type granulosa cell tumors while one case was Sertoli-leyding cell tumor.

Figure 3: Histomorphological types of ovarian tumors in forty cases of primary malignant neoplasm of ovary







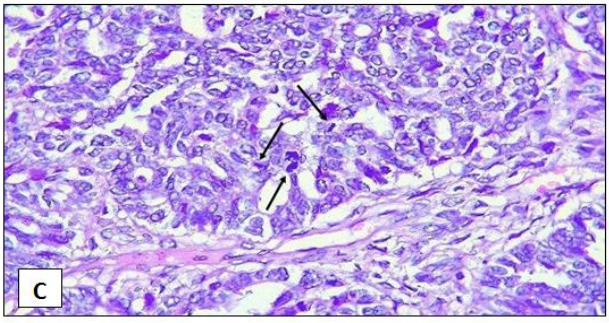


Figure 4: High-grade serous carcinoma . A , Complex papillary with solid pattern growth invaded the ovarian stroma (40X) . **B** and **C** , Neoplastic cells show high-grade nuclear features with significant pleomorphism and mitotic figures(arrows) (**B**: 100X, **C**: 400X) .

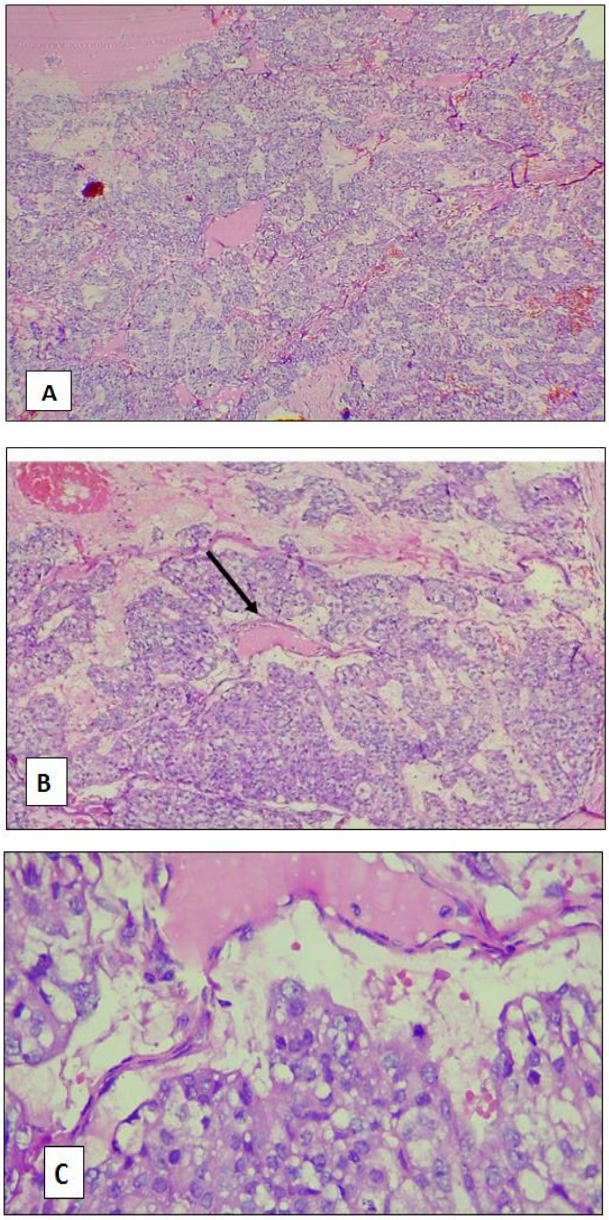


Figure 5: Yolk sac tumor . A, Anastomosing meshwork line by malignant cuboidal cells (40X) . **B and C,** Schiller-Duval sinus (arrow) with central vascular core line by cuboidal to columnar epithelial –like cells (**B**: 100X, **C**: 400X) .

DISCUSSION

Ovarian cancer lead to considerable morbidity and mortality and these tumors have a wide spectrum of clinical, morphological and histological features [6].

The presenting study shows increase frequency of ovarian cancer mainly of surface epithelial type with increase age and most of patients were in age group (51-60) this result is consistent with other studies conducted by Hussein et al [3] , Abdullah [26] and Chandanwale et al [6].

Regarding symptoms and signs, in this study most of cases presented with pelvic mass and this consistent with a study published by Hashim et al[27] so detection of early-stage disease can be done by palpation of adnexal mass on routine examination. However, most of adnexal masses may require moderate size for palpation [27].

Ascites present in third of cases this agree with a study published by Garg [28] while in study done by Manoja et al [29] ascites account only 8.3% of cases , Ascites is suspected by clinical symptoms such as increase in abdominal girth or ultrasound results and this is associated with advanced-stage disease [27] .

One third of patients had metastasis at time of diagnosis in comparison to study done by Hashim et al [27] in which percentage is higher and more than half of patients had metastasis at time of diagnosis. This delay between the onset of symptoms and diagnosis may belong to the natural and type of tumors as most of these cases that present late belong to serous type carcinoma.

The laterality were similar to the studies conducted by Chandanwale et al [6] and Manoja et al[29] in that most of the malignant tumors were unilateral .

The presented study shows more than half of malignant tumors larger than 10 cm in diameter and this findings were in accordance with study done by Garg et al [28] .

In this study half of tumors were solid/cystic in nature this agree with study done by Chandanwale et al[6].

Regarding the frequency of histological types of ovarian cancer ; epithelial type of ovarian cancer was the main type in the presented study followed by germ cell tumors and sex cord tumors this result consist with other studies done by Chandanwale et al [6] and Gupta et al [30] While studies done by Hussein et al [3] and Yousif et al [31] the majority of ovarian malignancies were epithelial then sex cord stromal and germ cell tumors .

In the studied sample, the serous cystadenocarcinoma was the most common tumor and this finding agree with studies done by Hashim et al [27],Yousif et al [30] , Gupta et al [31]and Mankar et al [32] .

Regarding grading of malignant surface epithelial tumors most cases were of high grade this consist with study of Hussein et al [3].

CONCLUSION

1. Malignant surface epithelial tumors comprises the most common type of ovarian cancer and of which serous carcinoma considered the main subtype followed by mucinous cyst adenocarcinoma.
2. Advancing age increased the possibility of malignant transformation and most of cases occur over 50 years old especially the cases of surface epithelial type.
3. Most of tumors unilateral with solid cystic in nature.
4. Pelvic mass was the most presenting sign of ovarian cancer.

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