

Prevalence of female reproductive system tumors among patients at Al-Bayda Medical Center

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Abstract

Female genital tract tumors are common and cause significant cancer morbidity and mortality worldwide. The prevalence of neoplasms according to their anatomical location depends on various cancer-associated predisposing factors. The present study aimed to estimate the prevalence of female reproductive system tumors among eastern Libyan females according to anatomical site and patient age. Gynecological specimens received in the pathology department of Al-Bayda Medical Center (AMC)-Libya, were studied, and the prevalence rate for each type of tumor was compared to regional and worldwide data. Retrospective hospital-based research to analyze data of 936 gynecological specimens diagnosed over six years (January 2014-January 2020) at the Department of Pathology, Libya. A total of 936 gynecological specimens were reviewed corresponding to patients between 15 to 70 years of age. The majority of cases (293 cases; 45.9%) were endometrial tumors, leiomyomas (190 cases; 26.9%), ovarian tumors (214 cases; 33.4%) and gestational trophoblastic diseases (21 cases; 3.2%). The least common tumors were uterine cervical tumors (15 cases; 2.1%). Benign tumors were most frequent in the second and fourth decades of life, while malignant neoplasms were most frequent from the fifth to eighth decades of life. Among eastern Libyan females from Al-Bayda region, the gynecological tumors with the highest incidence rate were endometrial tumors, followed by ovarian serous cystadenomas, then leiomyomas, gestational trophoblastic diseases and lastly uterine cervical tumors.

Keywords: Prevalence, Female genital tract tumors, gynecological specimens, Al-Bayda Medical Center (AMC).

Introduction

The female genital tract is the site of a variety of benign and malignant neoplasms. The prevalence of these neoplasms, whether benign or malignant according to their anatomical location, depends on various risk factors. These risk factors include a person's age, family history, exposure to the human papilloma virus (HPV), long exposure to estrogen hormone replacement therapy or tamoxifen therapy and other cancer associated predisposing factors (1). Cancers of the cervix, endometrium, and ovaries are relatively common and cause significant cancer morbidity and mortality; whereas cancers of the vulva, vagina, and fallopian tubes, in the addition to choriocarcinomas, are rare (2). According to age distribution, endometrial hyperplasia is commonly seen during the perimenopausal or menopausal period, while endometrial cancer affects mainly postmenopausal women with an average age of 60 years, and it is uncommon in women under the age of 45 years. Benign ovarian tumors are seen between ages 20 and 45 years, whereas most ovarian cancers develop after menopause with more than half occurring in women 63 years of age or older. Unlike benign ovarian tumors, ovarian cancers are rare in women younger than 40 years of age. Cervical cancers are most frequently diagnosed in women between the ages of 35 and 55 years. The average age at diagnosis is 50 years. They rarely develop in women younger than 20 years of age (3). Efforts targeted at data collection of site-specific tumor frequencies began in 2007 in Libya, which was divided into five sections by Ministry of Health (Figure 1) (4). Libyan cancer registry centers include Tripoli, Benghazi, Sabha, Misurata and Sabratha. Unfortunately, most of these centers are still unsatisfactory as they do not fit the criteria specified by the International Agency for Research on Cancer's Criteria (5, 6). In the Al-Bayda region, which is located in eastern Libya, there is no cancer registry center to collect the data of cancer patients. The current study will provide the report of the prevalence of female reproductive system tumors among females in eastern Libya according to anatomical site and patient's age, based on data collected at pathology department of Al-Bayda Medical Center (AMC), Libya. Gynecological specimens corresponding to patients between 15 to 80 years of age were reviewed, and the prevalence rate for each type of tumor was compared to regional and worldwide data.

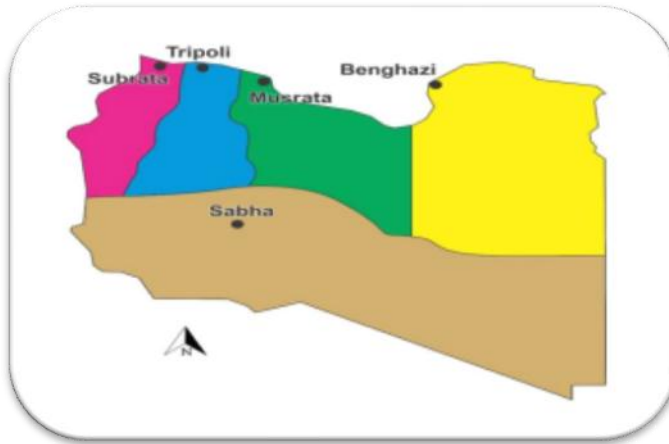


Figure 1: General map of the major regions of cancer registry centers in Libya.

Materials and Methods

The present study is a retrospective hospital-based research that analyzes data from records of patients who were diagnosed at department of pathology of (AMC) over six years "January 2014 to January 2020". Most of the patients presented with menorrhagia and underwent a dilatation and curettage (D&C) operation or hysterectomy (subtotal or total; with or without adnexa). Other patients complained of acute abdominal pain or were incidentally found to have an ovarian cyst during other surgical operations, after which they subsequently underwent ovarian cystectomy. The patients were diagnosed using histopathology sample confirmation techniques. The available clinic-pathological data of all patients, including age and type of tumor, was obtained from pathology reports and reviewed. Benign and malignant tumors of female reproductive organs categorized according to the 4th edition of WHO classification into nine categories; tumors of ovary, peritoneum, fallopian tube, broad ligament and other uterine ligaments, uterine corpus, uterine cervix, gestational trophoblastic diseases, vagina, and vulva (7). The current study will provide data regarding the prevalence of the most common female genital organ tumors, and it will exclude the less common and rare tumors due to absence of reported cases in the AMC pathology department. Data were entered into SPSS program version 22 for analysis; frequencies and percentages were used.

Results

A total of 936 gynecological specimens, including dilatation and curettage (D&C), hysterectomy, myomectomy, and ovarian cystectomy specimens, were received in the pathology department of AMC, over six years, "January 2014 to January 2020".

As shown in Figure 2, the largest number of samples was received in 2014 (322 specimens; 34.4% of the total), while the smallest number of samples was received in 2019 (60 specimens; 6.4% of the total). Six hundred and forty out of 936 specimens (68.4%) were diagnosed as female genital organ tumors, either benign or malignant. The remaining 296 cases (31.6%) were diagnosed as non-neoplastic diseases, including endocervical polyps, endometrial polyps, and adenomyosis. Table 1 was shown the number and percentage of cases of female reproductive system tumors in the pathology department, AMC (2014-2019) which include main categories including endometrial tumors, myometrial tumors, ovarian tumors, gestational trophoblastic tumors and uterine cervix tumors. The diagnosis of gestational trophoblastic disease was found in 23 patients (3.2%) ranging in age from 16 to 60 years. Twenty one cases were diagnosed as molar pregnancy (2.95%)

Previous types were classified with more detail at different age groups as shown in Table 2. The majority of cases were endometrial tumors, of which most were diagnosed as endometrial hyperplasia without atypia in patients ranging in age from 31 to 50 years. Endometrial endometrioid carcinoma (EC), grade I, was diagnosed in patients ranging in age from 50 to 70 years. Cases of carcinosarcoma (malignant mixed mullerian tumor, MMMT) and endometrial stromal sarcoma (ESS) accounted for only 0.5% and 0.3% of total cases, respectively (Table 3).

Leiomyomas represented the second largest subset of tumors (190 cases; 29.7%) in patients ranging in age from 15 to 70 years. While total ovarian tumors were reported with (214 cases: 33.44%) and this includes ovarian serous cystadenomas (108 cases; 16.9%) in patients ranging in age from 15 to 70 years and mature cystic teratomas (24 cases; 4.4%) in patients ranging from 16 to 46 years. Table 4 illustrated the number of cases with a percentage of different diagnoses of ovarian tumors.

Regarding tumors of the uterine cervix, they consisted of the following: 8 cases (1.3%) of cervical intraepithelial neoplasia (CIN) in patients ranging

in age from 29 to 60 years; 3 cases (0.5%) of cervical squamous cell carcinoma; and 2 cases (0.3%) of cervical adenocarcinoma (Table 5).

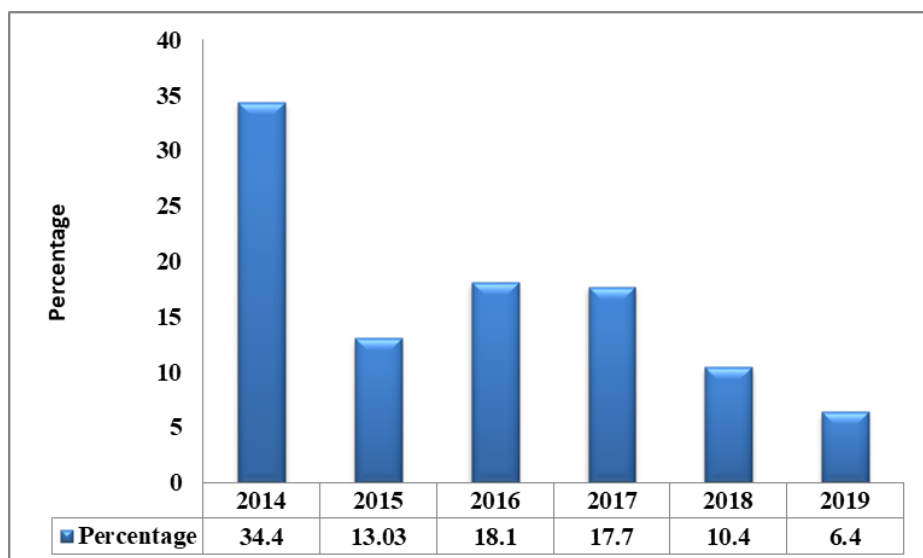


Figure 2: The number of the gynecological specimens received in the pathology department, Al Bayda Medical Center (2014-2019).

Table (1): Distribution of female reproductive system tumors in pathology department, AMC (2014-2019)

Category of Tumor	Number of cases. (%)
Endometrial tumors	293 (45.9)
Myometrial tumors	190 (26.9)
Ovarian tumors	214 (33.4)
Gestational trophoblastic tumors	21 (3.2)
Uterine cervix tumors	15 (2.3)

Note: 93 cases with more than one diagnosis at same time

Table (2): Distribution of female reproductive system tumors in pathology department with different age groups AMC (2014-2019)

Category of Tumor	Number of cases (%) at different age group						Total
	<20	21-30	31-40	41-50	51-60	> 60	
Non	6 (0.6)	25 (2.7)	61 (6.5)	118 (12.6)	54 (5.8)	32 (3.4)	296 (31.6)
EH	3 (0.3)	7 (0.7)	29 (3.1)	118 (12.6)	62 (6.6)	30 (3.2)	249 (38.9)
EC	0 (0)	0 (0)	0 (0)	6 (0.6)	18 (1.9)	20 (2.1)	44 (6.9)
L	2 (0.2)	10 (1.1)	44 (4.7)	99 (10.6)	26 (2.8)	9 (1)	190 (29.9)
OS	15 (1.6)	45 (4.8)	39 (4.2)	47 (5)	21 (2.2)	8 (0.9)	175 (27.3)
OG	4 (0.4)	9 (1)	6 (0.6)	4 (0.4)	0 (0)	0 (0)	23 (3.6)
O sex	3 (0.3)	1 (0.1)	4 (0.4)	4 (0.4)	2 (0.2)	0 (0)	14 (2.2)
OO	0 (0)	0 (0)	0 (0)	2 (0.2)	0 (0)	0 (0)	2 (0.3)
MP	3 (0.3)	3 (0.3)	10 (1.1)	2 (0.2)	2 (0.2)	1 (0.1)	21 (3.2)
CIN	1 (0.1)	2 (0.2)	1 (0.1)	3 (0.3)	1 (0.1)	1 (0.1)	9 (1.4)
CC	0 (0)	0 (0)	0 (0)	1 (0.1)	0 (0)	5 (0.5)	6 (0.9)
Mix	1 (0.1)	1 (0.1)	10 (1.1)	54 (5.7)	20 (2.1)	7 (0.7)	93 (14.5)

Where: Non: Non-neoplastic diseases. EH: Endometrial hyperplasia, EC: Endometrial carcinoma, L: Leiomyoma, OS: Ovarian surface epithelium tumors, OG: ovarian germ cell tumor, O sex: Ovarian sex cord tumors, OO: other ovarian tumors, MP: Molar pregnancy, CIN: Cervical Intraepithelial Neoplasm, CC: Cervical carcinoma and Mix: Mixed cases (two cases at same time).

Table 3: Percentage of the histopathological variants of uterine corpus tumors in the pathology department, AMC (2014-2019)

Category	Histopathological variant	Number of cases (%)
Endometrium tumors	Endometrial hyperplasia without atypia	214 (33.4)
	Endometrial hyperplasia with atypia	12 (1.9)
	Endometrioid carcinoma	31 (4.8)

	(EEC)	
	ECC, Grade I	21 (3.3)
	ECC, Grade II	7 (1.1)
	ECC, Grade III	3 (0.5)
	Carcinosarcoma (MMMT)	3 (0.5)
	Endometrial Stromal Sarcoma	2 (0.3)
Myometrium tumors	Leiomyoma	190 (29.7)

Table 4: Percentage of the histopathological variants of ovarian tumors in the pathology department, AMC (2014-2019)

Category	Histopathological variant	Number of cases (%)
Ovarian surface epithelium tumors (OS)	Serous cystadenoma	108 (16.9)
	Serous borderline tumors	10 (1.6)
	Mucinous cystadenoma	11 (1.7)
Germ cell tumors	Mature cystic teratoma	28 (4.4)
Ovarian Sex cord stromal tumors	Granulosa cell tumor, juvenile type	8 (1.3)
	Granulosa cell tumor, adult type	9 (1.4)
	Ovarian fibroma	11 (1.7)
	Ovarian luteoma	11 (1.7)
Miscellaneous tumors	Ovarian leiomyoma	9 (1.4)
	Metastatic adenocarcinoma	8 (1.3)

Table 5: Percentage of the histopathological variants of uterine cervix tumors in the pathology department, AMC (2014-2019)

Category	Histopathological variant	Number of cases (%)
Cervical Intraepithelial Neoplasm (CIN)	CIN I	8 (1.3)
	CIN II	2 (0.3)
Cervical carcinoma	Cervical squamous cell carcinoma (SCC)	3 (0.5)
	Cervical adenocarcinoma	2 (0.3)

Discussion

Tumors of female genital tract are generally divided into nine categories according to 4th edition of WHO classification (7). Further updates to the most recent WHO guidelines have now included the molecular classification of endometrial carcinoma, uterine sarcoma, endocervical adenocarcinoma, and vulvar squamous cell carcinoma (8, 9). In the present study, data found that the age of the patients ranges from 15 to 80 years. The peak prevalence of benign tumors is the second and fourth decades of life, while the peak prevalence of malignant neoplasms is in the fifth and eighth decades of life. These findings indicate that age is one of the predisposing factors for malignancy. Endometrial tumors are one of the most gynecological tumors worldwide. Endometrial hyperplasia is commonly seen during perimenopausal or menopausal period and rarely occurs in women younger than 35 years of age, while endometrial cancer affects women with an average age of 60 years and rarely occurs in women under the age of 45 years (10). Leiomyoma is an extremely common neoplasm with on overall incidence that ranges between 4% to 11% but can reach up to 40% in women over the age of 50 years (10). It is more common in black women, in whom they tend to be very numerous (11). In the present study, leiomyomas represented the second largest subset of tumors with 29.7% in patients ranging in age from 15 to 70 years. This finding is higher than the percentage of leiomyomas reported in studies from other countries across the world, as evident by the following examples: 9.8% in Italy; 9.6% in United States (US); 9% in Korea; 4.6% in France; and 4.5% in United Kingdom (UK) (12). Regarding age distribution, both the present study and (13) study from the Libya, showed that cases

clustered in women between 50 to 54 years of age (Libya: 39 out of the total 164 cases with a frequency of 23.7%; US: 15.9%).

Ovarian tumors are common and the vast majority (80%) benign cysts, which are especially seen in women between the ages of 20 to 45 years. Ovarian cancer is common at age 63 years and is rare in women younger than age 40 years. It is the fifth most common cause of cancer death in women (14). According to data from our study, ovarian tumors were the third in prevalent (214 out of 640 specimens; 33.4%) with the bulk representing serous cystadenomas (108 specimens out of 640; 16.9%). These findings are similar to those reported before (15) at study from Nigeria, which found ovarian tumors to be the third most common female reproductive organ tumors (11.4%) in a group of 404 women. In India, according to a study by (16), ovarian tumors constituted 11.43% of 577 cases of female reproductive organ tumors, making them the second most common type in the country and confirming that ovarian tumors are definitely common worldwide.

Gestational Trophoblastic Disease is a rare disease that accounts for less than 1% of all female reproductive system tumors. Cases of hydatiform moles are dominant in Asia and Middle-East (100-1000/100,000 pregnancies) (17), while cases of choriocarcinoma are more prevalent in the US and Europe (1/40.000 pregnancies) (18). In present study, 3.6% of all gynecological tumor specimens were diagnosed as gestational trophoblastic disease, thus becoming the fifth most common tumor of female genital tract in eastern Libya. The overwhelming majority of cases (22 out of 23 cases; 94.7%) were hydatiform moles, while only one case was choriocarcinoma. These findings are in keeping with the percentages of hydatiform moles (46 out of 54 cases; 85.18%) and choriocarcinomas (3 out of 54 cases, 5.5%) reported by (19) in study from Italy. In contrast to our data, (15), study from Nigeria categorized GTD as the second most common gynecological tract tumor (58 out of 404 cases; 14.4%).

Cervical cancer is the most common gynecological cancer in most countries worldwide; however, the incidence rates have dropped by more than 50% between the mid 1970s and mid-2000s due to an increase in screening, which can detect pre-cancerous changes in the cervix, as well as the use of Human Papilloma Virus (HPV) vaccine. In the present study, uterine cervix tumors were fifth in order of prevalence (15 out 640 specimens; 2.3%) making

them one of the rare female gynecological tract tumors in our society. On the contrary (15, 16), studies from India and Nigeria, respectively, found uterine cervix tumors to be the most common in their countries, with a prevalence of 77.29% in India and 68.4% in Nigeria (446 out of 577 cases).

Conclusion

The current study concluded that the prevalence of female reproductive system tumors in the gynecological specimens from the Al-Bayda region is closely similar to that reported by studies from around the world. The similarity in prevalence applies to almost all tumors apart from the following: cervical tumors, which are the number one tumor worldwide but we found to be number five in the Al-Bayda region; and leiomyomas, for which the frequency reported by our study was higher than that reported by other countries.

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معدل حدوث أورام الجهاز التناسلي الأنثوي في مرضى من مركز البيضاء الطبي

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المستخلص العربي

تعتبر أورام الجهاز التناسلي الأنثوي من الأمراض الشائعة والمسببة للموت في العالم. قُسمت إلى أورام حميدية وأخرى سرطانية خبيثة. معدل إنتشارها عالمياً يعتمد على أسباب متعددة تختلف باختلاف مكان الورم بالجهاز التناسلي الأنثوي. تعتمد هذه الدراسة على دراسة معدل إنتشار هذه الأورام في نساء الشرق الليبي باختلاف الأعمار والعضو المتضرر من الجهاز التناسلي الأنثوي. حيث اعتمدت الدراسة على بيانات من مركز البيضاء الطبي تم فيها جمع المعلومات من تقارير العينات التي شُخصت من قبل اخصائيين علم الأمراض التشريحي بمختبر المركز خلال الفترة من 2014 إلى 2019. نتائج الدراسة كانت بعد جمع 936 تقرير لكل عينات أمراض الجهاز التناسلي الأنثوي التي شُخصت بالمركز بأعمار متفاوتة من 15 إلى 70 عام. لوحظ أن الأورام الأكثر إنتشاراً من بطانة الرحم بمعدل 45.9%، ورم عضلي أملس بمعدل 26.9%، أورام المبيض كانت بنسبة 33.4% ومن ثم أمراض المشيمة بنسبة 3.2%. أما الأورام الأقل إنتشاراً كانت من عنق الرحم بمعدل 2.1%. وكان معدل حدوث الأورام الحميدية أكثر إنتشاراً في في العقد الثاني والرابع من العمر، أما الأورام السرطانية الخبيثة أكثر شيوعاً من الخامس إلى الثامن من العمر. أورام الجهاز التناسلي للأنثى شائعة وتتسبب في وفيات ووفيات كبيرة بسبب السرطان في جميع أنحاء العالم. يعتمد انتشار الأورام وفقاً لموقعها التشريحي على عوامل مؤهبة مختلفة مرتبطة بالسرطان. هدفت الدراسة الحالية إلى تقدير انتشار أورام الجهاز التناسلي الأنثوي بين إناث شرق ليبيا حسب الموقع التشريحي وعمر المريض.

الكلمات المفتاحية: انتشار أورام الجهاز التناسلي للأنثى، عينات أمراض النساء، مركز البيضاء الطبي.