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Ovarian Cancer in Sudan

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ABSTRACT

Our purpose was to provide an overview of hospitalized based oncological reports of ovarian cancer to advance awareness on ovarian cancer problems in the Sudan which is the most lethal gynecological malignancy worldwide and the sixth most common cancer among women in 2014.During this year 2017 Ovarian cancer (OVC) ranks fifth in cancer deaths among women, accounting for more deaths than any other cancer of the female reproductive system. The possibility to getting ovarian cancer during lifetime is about 1 in 75, and lifetime chance of dying from ovarian cancer is about 1 in 100. Even though OVC mainly develops in older women there is younger age range reported in this study. Because of its latent for aggressive local invasion and the lack of sensitive in early screening methods, around 43% of all ovarian cancers are diagnosed at stage4, 21% at stage3, 21% at stage2, and only 15% at stage1. (9%) of all patients has history of cancers. Common clinical symptoms involved in the medical reports are pelvic pain119 (92.9%), abdominal pain 81(63.3%), vaginal discharge 127(99.2%), and vaginal bleeding 13(10.1%), with p-value 0.054, 0.043, 0.032, and 0.119, respectively. CT scan results 61% as pelvic mass, 69% bilatral mass, and 70% present with ascites with p-value 0.001. Histopathological presentation of OVC types were the Epithelial OVC 124(96.9%) and, Germ cell OVC 4 (3.1%). Concluding that the common type of ovarian cancer in Sudan is epithelial cell origin cancer, and ovarian malignancies tend to occur in younger age.

Key words: Ovarian cancer, Pelvic, Bilateral, Ascites and CT-scan.

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INTRODUCTION

Ovarian cancer has been called the "silent killer" because symptoms often become apparent only when the cancer has spread and is harder to treat. Is the fifth leading cause of cancer-related death in women in the United States and is the leading cause of gynecologic cancer deaths. Despite being one-tenth as common as breast cancer, it is three times more lethal and carries a 1:70 lifetime risk. 2017, approximately 20,180 women will be diagnosed with ovarian cancer, and 15,310 will die from the disease (Jemal et al., 2006). In developing countries, it is ranked the second most common gynecological cancer, and constitutes the fourth most common of all cancers in women, with 17,755 incident cases in 2012. The high mortality rate of ovarian cancer is due to the lack of a screening strategy to detect early-stage disease (Dafalla et al., 2013, 2016). In Sudan the incidence rate of ovarian cancer depend on a hospital-based data however, in recent data set (2009 to 2010) from the National Cancer Registry for Khartoum State alone, ovarian cancer was the fourth most common cancer in women, with an estimated incidence rate of 188 per 100,000 population, a gender-specifc rate of 8.0 per 100,000 population, and an age-standardized rate (ASR) of 7.0 per 100,000 population (Shahrazad et al., 2016). Ovarian cancer presents with very few, if any, specific symptoms. Twenty percent of patients are diagnosed at stage I and II when the disease is still confined to the ovary.

In patients diagnosed with advanced disease, the 5 year survival rate ranges from 20 to 25%, depending on the stage and grade of tumor differentiation (Schwartz, 2002; Berchuck et al., 1994). Of these patients, 80 to 90% will initially respond to chemotherapy, but less than 10 to 15%

will remain in permanent remission (Schwartz, 2002; Mutch, 2002; Pieretti et al., 2002). Ovarian tumors are classified according to the kinds of cells from which the tumor started (cell of origin) and whether the tumor is benign (non-malignant) or cancerous (malignant). The three main types of ovarian tissue are composed of epithelial cells, stromal cells, or germ cells. In ovarian cancer, one of these types of cells has divided and reproduced uncontrollably until accumulation of the cells forms a growth or tumor (Schwartz, 2002). Epithelial cells normally cover the ovary and are the cells of origin responsible for approximately 85% of ovarian cancers. Stromal cells are found inside the ovary and the primary source of the female hormones estrogen and progesterone (Pieretti et al., 2002). The International Federation of Gynecology and Obstetrics in US (FIGO) stages ovarian tumors on a scale of I to IV according to how well- or poorly-organized the tumors are and whether the cancer is localized or has spread (metastasized). Stage I is cancer that is localized and contained in the ovary or ovaries. Stage II is cancer that has spread to other pelvic organs such as the uterus, bladder, or rectum, but is confined to the pelvis (Abuidris et al., 2016). Stage III is cancer that has spread to the lymph nodes and/or abdominal lining and organs, with possible superficial liver metastases. Stage IV is cancer that has spread to distant organs, such as the brain, bone, lungs, or functional part of the liver (liver parenchyma). Risk factors for the development of ovarian cancer include family history of gynecologic cancer, age, obesity, frequency of ovulation, ethnic heritage, and dietary factors. Number of pregnancies (parity) is an important risk factor. Women with a history of pregnancy have a 50% lower risk of ovarian cancer than women who were never pregnant (nulliparous), and a protective effect is shown in women with multiple pregnancies. Positive family history of ovarian, breast, or uterine cancer in first-degree relatives (mother, sister, or daughter) is found in only 5 to 10% of cases. Feminine powders or deodorant sprays may be associated with increased risk.

The use of oral contraceptives is associated with decreased risk of ovarian cancer (Dafalla et al., 2013; Saeed et al. 2014). Women whose number of ovulations is decreased by other factors, (for example, irregular periods, menopause earlier than age 50, breast feeding) also may be less likely to develop ovarian cancer. Tubal ligation and hysterectomy also have been associated with a reduced risk of ovarian cancer, but the evidence is less conclusive. It is unclear if short-term hormone replacement therapy (HRT) contributes to risk, but those using HRT longer than 10 years show twice the risk for ovarian cancer compared to those who do not (Pieretti et al., 2002). The exact causes of ovarian cancer are not known. The likelihood of developing the disease may be higher if a woman has one or more of the following ovarian cancer risk factors. However, having risk factors does not mean you will develop the disease. Age, Two-thirds of women diagnosed with ovarian cancer are age 55 or older. Family history, women with a mother, sister, grandmother or aunt who has had ovarian cancer has a higher risk of developing it. Genetic mutations, some women who develop ovarian cancer have an inherited mutation on one of two genes called breast cancer gene 1 (BRCA1) and breast cancer gene 2 (BRCA2). Women with the BRCA1 mutation, have a 35 to 70% higher risk of ovarian cancer. Women with the BRCA2 mutation have a 10 to 30% higher risk. However, the vast majority of women who are diagnosed with ovarian cancer do not have either mutation (Cancer Treatment Centers of America, 2012). Breasts, colorectal or endometrial cancer, Women who have been diagnosed with one of these cancers have a higher risk of developing ovarian cancer. Childbearing status, Women who have delivered at least one child, especially before age 30, are at a lower risk for developing the disease.

The more children a woman has, the more her ovarian cancer risk declines. Women who breastfeed further reduce their risk. Obesity, women with a body mass index (BMI) of 30 or greater may have a higher risk of developing ovarian cancer, hormone replacement therapy (HRT); some studies suggest there is a link between hormone replacement therapy (HRT) and ovarian cancer. This risk appears to be greatest for women who take estrogen only for more than five years, but more research is needed to confirm the relationship between HRT and ovarian cancer (Cancer Treatment Centers of America, 2012; Muhammad et al., 2014). Therefore, an adequate screening and diagnostic tests for early detection of ovarian cancer should greatly improve patient survival. Currently, in some institutions, the screening strategy for ovarian cancer is annual pelvic examinations. Transvaginal ultrasound (Olivier et al., 2006), and serial measurements of the biomarker CA-125, have been included for the high-risk population, but with little success. Common symptoms presented in OVC patients are menopausal abnormality and intestinal illnesses, individuals in later stages may report indigestion, gas, nausea, vomiting, loss of appetite, a feeling of fullness after small meals, pelvic or abdominal pain, swelling, increased frequency or urgency of urination, unexplained change in bowel habits, unexplained weight gain or loss, pain during intercourse, ongoing fatigue, lower back pain, shortness of breath, and, in rare cases, postmenopausal vaginal bleeding. These symptoms usually do not become apparent until the later stages of the disease when the cancer mass is large enough to interfere with pelvic organs such as the bladder or rectum, or after the cancer has metastasized to the abdominal cavity. Obtaining a personal obstetric and gynecologic history and a family history of gynecologic disease may be important in diagnosis (Mutch, 2002; Ye et al., 2006). Physical exam, there is no definitive physical examination to detect ovarian cancer in its early stages. Physical findings usually are not significant. Because ovarian cancer often has no early symptoms, over 70% of women have progressed to an advanced stage by the time the disease is diagnosed.

In advanced ovarian cancer, examination and palpation of the abdomen may reveal ovarian, pelvic, or abdominal mass or possible bowel obstruction. Annual gynecologic exams, (pelvic exams) may reveal the presence of the disease in its later stages. During the pelvic exam, the

Table 1. Frequency of common symptoms among OVC patient.

Stages	Pelvic pain		Abdominal pain		v-discharge		v-bleeding	
	Yes	No	Yes	No	Yes	No	Yes	No
1	19 (14.8%)	0 (0.0%)	7 (5.5%)	12 (9.4%)	18 (14.1%)	1 (0.8%)	0 (0.0%)	19 (14.8%)
2	22 (17.2%)	5 (3.9%)	18 (14.1%)	9 (7.0%)	27 (21.1%)	0 (0.0%)	5 (3.9%)	22 (17.2%)
3	26 (20.3%)	1 (0.8%)	16 (12.5%)	11 (8.6%)	27 (21.1%)	0 (0.0%)	1 (0.8%)	26 (20.3%)
4	52 (40.6%)	3 (2.3%)	40 (31.3%)	15 (11.7%)	55 (43.0%)	0 (0.0%)	7 (5.5%)	48 (37.5%)
P-value	0.054		0.043		0.032		0.119	

physician examines the ovaries for size, shape, and consistency, and evaluates the abdomen for fluid in the abdominal cavity (ascites) (Olivier et al., 2006). Blood Tests, there is no definitive screening test for detection of ovarian cancer in its early stages comparable to mammography for early detection of breast cancer (Jemal et al., 2006; Einhorn et al., 1992). Finally, routine imaging tests are not needed in all women who are suspected of having an ovarian tumor. Noninvasive diagnostic imaging such as ultrasound performed with a small instrument inserted into the vagina (transvaginal ultrasound), computed tomography (CT), and magnetic resonance imaging (MRI), may help distinguish between benign and cancerous tumors. X-ray procedures are used if involvement of the colon or urinary tract is suspected. In women who have gastrointestinal (GI) symptoms, examination of the GI tract with upper and lower endoscopy is indicated to help rule out GI conditions and evaluate for bowel obstruction caused by pressure from an ovarian tumor or other abdominal tumor. Our purpose of this retrospective descriptive review was to provide trends of ovarian cancer in women attending military hospital Omdurman Khartoum state from 2015 to 2017 as well as to investigate the demographical data of study population (age at diagnosis, common symptoms, histological type, and stage, etc.).

MATERIALS AND METHODS

A total of 128 ovarian cancer patient age range (20 to 82) years old in their different stage of the disease attending oncology clinics in Omdurman Military hospitals Khartoum state from different gynecological clinics in Sudan were included in this review study, 2015 to 2017. A hospital-based descriptive cross-sectional study devised to determine the extent and detect the severity of OVC as well as to identify the symptoms, clinical presentation ovarian cancer types and stages. The sample population was divided into three aged groups including 45(35.2%) for age group (20 to 40 years), 56(43.8%) for age group (41 to 61 years), and 27 (21.1%) for age group (62 to 82 years). All data was collected from hospital records since 2015. Ethical release to proceed in the study was obtained from the ethical committee of the Faculty of Medical Laboratory Sciences at Al Neelain University. The study lasted for five months starting from February 2017 and ending in July 2017. Statistical analysis, Raw data were entered into a spread sheet of SPSS statistical package program, version 13. The data were rearranged as appropriate. Descriptive analysis was performed to all study variables. Data where tested for normality using Kilmogrove-Smirnove method. Chi-square test was performed to detect significant differences between study variables such as age, cycle pattern, symptoms with the ovarian cancer stages. Cross-tabulations were done as well to explore relations between study variables. To detect the associations between study variables, relation strength, and significance.

RESULTS

One hundred and twenty-eight (100%) ovarian cancer patients were selected in this review. (9%) of all patient had history of cancers (ovarian, breast, uterine and colorectal) All ovarian cancer patient was distributed into three aged groups; including 45(35.2%) for age group (20 to 40 years), 56(43.8 %) for age group (41 to 61 years), and 27 (21.1%) for age group (62 to 82 years). OVC participants marital status percentage presented as (56.3%) married and (43.8%) as single females; this last group had irregular and menopause cycle pattern are 46(35.9%), and 82(64.1%) of the cases, respectively. Frequency of common symptoms involved in the medical reports are pelvic pain119 (92.9%), abdominal pain 81(63.3%), vaginal discharge 127(99.2%), and vaginal bleeding 13(10.1%). These results are shown in Table 1 according to the stage of cancer with p-value 0.054, 0.043, 0.032, and 0.119, respectively. Results of CT scan are presented in Figure 1, Percentage of cancer stage in this review are shown in Figure 2. Statistically significant between OVC stages and CT scan results with a p-value of 0.001 are shown in Table 2. According to The World Health Organization (WHO) for histological classification, OVC types are Epithelial OVC 124(96.9%) and, Germ cell OVC 4 (3.1%) (Table 3).

DISCUSSION

Ovarian cancer is the most lethal gynecological malignancy worldwide and the sixth most common cancer among women in 2014, during this year ovarian cancer

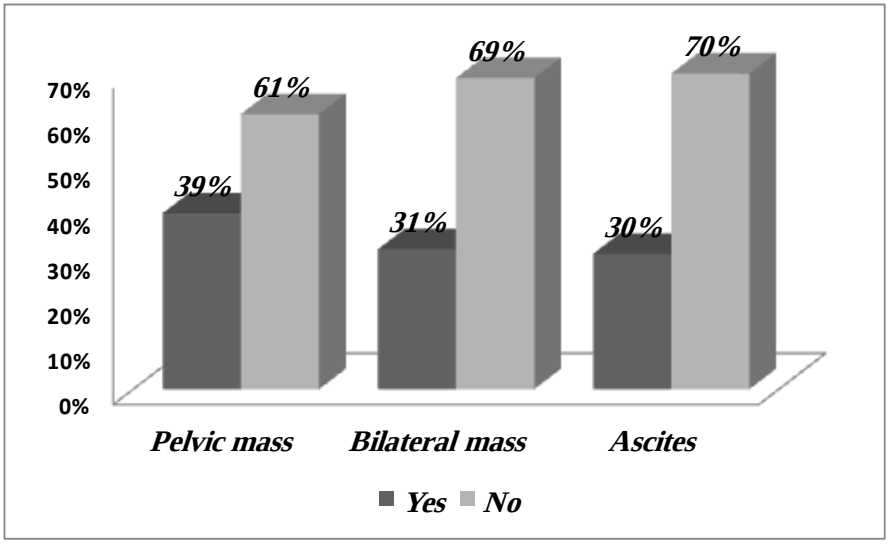

Figure 1. Ct-scan presentation result.

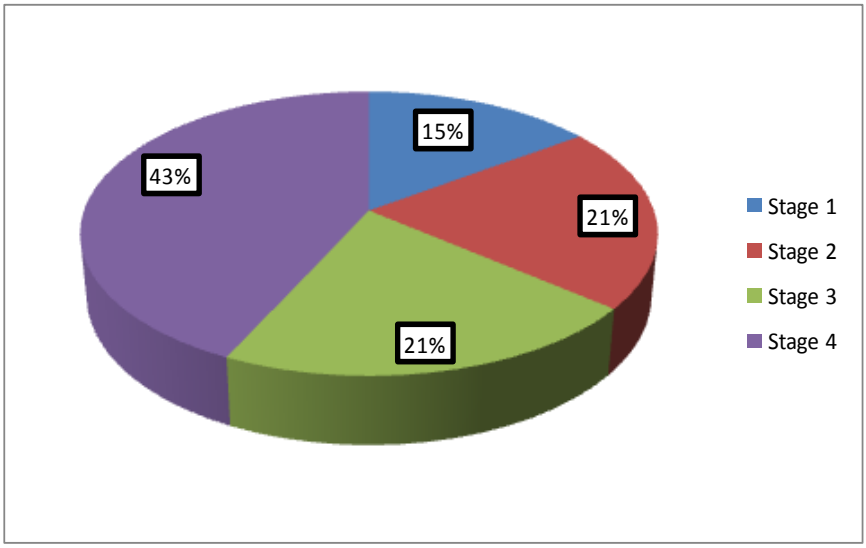

Figure 2. Percentage of cancer stage.

Table 2. Relation between OVC stages and CT scan results.

Stages	Pelvic mass		Bilateral mass		Ascites	
	Yes	No	Yes	No	Yes	No
1	0(0.0%)	19 (14.8%)	0 (0.0%)	19 (14.8%)	0 (0.0%)	19 (14.8%)
2	10 (7.8%)	17 (13.3%)	4 (3.1%)	23 (18.0%)	0 (0.0%)	27 (21.1%)
3	8 (6.3%)	19 (14.8%)	6 (4.7%)	21 (16.4%)	2 (1.6%)	25 (19.5%)
4	32 (25.0%)	23 (18.0%)	30(23.4%)	25 (19.5%)	37 (28.9%)	18 (14.1%)
Total	50 (39.1%)	78 (60.9%)	40 (31.3%)	88 (68.8%)	39(30.5%)	89 (69.5%)
P-value	0.001		0.001		0.001	

ranks fifth in cancer deaths among women, accounting for more deaths than any other cancer of the female reproductive system. A woman's risk of getting ovarian cancer during her lifetime is about 1 in 75. Her lifetime chance of dying from ovarian cancer is about 1 in 100 (CTCA, 2012). Even though OVC mainly develops in older women there is younger age range were reported in this review among Sudanese ovarian cancer patient.

Table 3. Relation between OVC types and age.

Ovarian neoplasms	Age	
	<45 Years	>45 Years
Epithelial OVC	47(36.8)	77(60.1)
Germ cell OVC	4 (3.1%)	0 (0.0%)
Total	51 (39.8%)	77 (60.2%)
P-value	0.044	

Because of its potential for aggressive local invasion and the lack of sensitive early screening methods, around 43% of all ovarian cancers included in this study are diagnosed at an advanced stage and only 15% in early stage then the 5 year survival rate for patients with clinically advanced ovarian cancer is only 15 to 20%, in striking contrast to a 5-year survival rate of over 90% for patients with stage I disease. Reaching to scientific evidence.

This review find that the common symptoms among OVC patients involved in the clinical reports are pelvic pain, abdominal pain vaginal discharge with the highest frequent, and vaginal bleeding with low frequency. Although the vaginal discharge is present in about 99% of the study population that does not mean the female suffering from vaginal discharge at a high risk to develop OVC. Cancer is not included in the major cancer series this is most probably the consequence of multiple combined factors, including little attention to OVC cancer screening, lack of diagnostic facilities, infrequent disease awareness, comparatively low life expectancy and young population structure.

A Computed Topographic Scan (CT scan) is the most useful noninvasive diagnostic test in women with pelvic, bilateral, and ascites are helpful in predicting the likelihood that mass is malignant. Histopathological distribution in our study group is similar to many published works, Ovarian Epithelial cell being the most common and followed by Germ cell. The first type includes serous and endometrioid neoplasms, which present in different age ranges included in this study, Germ cell neoplasm present in age under 45 years old associated with young ages.

CONCLUSIONS

By the end of this study, concluding that the common type of ovarian cancer in Sudan is epithelial cell origin cancer, and ovarian malignancies tend to occur in younger age. Further studies must be carried out to introduce biomarkers panel to support in screening, diagnosis, and follow up of ovarian cancer patients.

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