Histopathological pattern of gynaecological malignancies: National Health Laboratory (NHL), Sudan

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Abstract:

***Background*:** Gynaecological malignancies (GM) is a common cancer problem in both developing and developed countries .The burden of GM is more critical in developing countries, this is due to lack or deficient screening and late clinical presentation**.** The aim of this study is to study the histopathological pattern of GM in the NHL (National Health Laboratory) Sudan. ***Material &Methods*:** Clinical data, histopathological reports, stained tissue slides of patients diagnosed histologically as GM were revised from the archive of the department of histopathology and cytology at the NHL **.**

Results: 372 patients diagnosed histologically as GM from 1st Jan 2009-31st Dec to the 1st Jan 2013 were studied. The commonest GM histological type was cervical malignancies, followed by ovarian, endometrial, vaginal, vulvar, choriocarcinoma and tubal cancer respectively .***Conclusion:*** There is an urgent need for screening, early detection and prompt management for GM.

Keywords: GM, NHL, histopathological pattern.

Introduction:

Cancer is the second leading cause of death and disability worldwide; behind only to heart disease(1). More people die of cancer every year than Human Immunodeficiency Virus (HIV),

Tuberculosis and Malaria combined[1].Gynaecological malignancies are those involving the female genital tract, including those of the cervix uteri, myometruim, endometrium, ovary, fallopian tubes, vagina, vulva, and choriocarcinoma. World-wide gynaecological cancers are among the leading causes of cancer-related deaths[2].

According to data published in 2000, cancer was the 3rd cause of death in Sudan[3] . The first National Cancer Registry in Sudan (NCR) started in 1967 with a grant from the International Union Against Cancer (IUAC) but unfortunately discontinued in early 1980 due to lack of funds[4]. At that time the registry was based on histopathologically confirmed cases diagnosed at the Stack Medical Research laboratories (NHL) [4]. Recently in 2009 with fund from the Ministry of Health (Sudan); a population based National Cancer Registry (NCR) was established in Khartoum[4]. Disclosure of the first results of the newly established registry revealed 6771 new cancer cases registered, of these; 3645(53.8%) were in women and 3125(46.2%) in men. The most common cancer diagnosed in women was breast cancer, followed by leukaemia, cervix, ovary and, lymphoma[5]**.** A study retrieved data of 26652 cancer cases from patients records at the Radiation Isotope Centre in Khartoum (RICK) and National Cancer Institute at Wadmadani (NCI-UG) over the period 2000-2006, showed that most common cancer sites for females were Breast(29.3%), Cervix uteri(8.2%),Leukaemia (7.2%), Ovary(6.8%) and Oesophagus 5.9%[6].

Researchers from central Sudan studied GM, managed in the Institute of Nuclear Medicine in Wadmadani, found that ovarian cancer was the commonest type (39%) , followed by cervical cancer[7]. Investigators at Aminukano Teaching hospital in Nigeria studied GM, found cervical cancer to be the commonest type (48.6.%) followed by ovarian cancer (25.30%),endometrial cancer (11.25%) and Choriocarcinoma (9.24%)[8].A study in North-Western Nigeria covering GM over a 10 years period showed that most cases (67.8%) were cervical cancer ,the least common cancer was vaginal carcinoma (0.25%)[2]. A review of 968 cases of gynaecological malignancies from Pakistan , showed ovarian cancer to be the commonest type(42.4%),cervical cancer was the second (23.86%)[9]**.** A study on clinico-pathological features of gynaecological malignancies in East India showed that the commonest GM was cervical cancer (61%), followed by ovarian cancer (23.9%)[10]**.**

Up to our knowledge this is the first study on GM – at least fifty years back- from the National Health Laboratory, Khartoum, Sudan. The aim of this study is to examine the histopathological patterns of gynaecological malignancies(GM) in NHL Sudan .

Materials and Methods:

This is a 5-year retrospective descriptive, hospital-based study conducted on archived material dating to the period between 1st January 2009 and 31st December 2013. It studied surgical biopsy specimens diagnosed as gynaecological malignancies received at the histopathology and cytology department of the National Health Laboratory for Public Health (NHLPH), previously National Health laboratory (NHL), famous as Stack labs. The nucleus of NHL was the Wellcome Research Laboratories established in 1903[11].In 1925 the Wellcome Labs were moved to the Stack Labs near the Khartoum Civil Hospital and the Kitchener School of Medicine (Now the faculty of medicine ,university of Khartoum)[12]. The Stack Medical Research Laboratories was one of the offshoots of the original Wellcome laboratories. These laboratories were built in 1927/ 28 as a memorial to the late Sir Lee Stack, the British governor of Sudan. The Sudan National Health Laboratories, the recent 5-storey building, started work in April, 1969 adjacent to the old Stack laboratories [11].

The histopathology and cytology department at Stack /NHL was one of the first departments in Middle and East Africa and the only department in the country until 1978, when the laboratory of the Department of Pathology, Faculty of Medicine, University of Gazira was established in Wadmadani city[13]

The sources of the surgical specimens included in this study were from public and private hospitals in Khartoum state and other states of Sudan. Medical records, histopathology reports, tissue glass slides and paraffin embedded tissues pertaining to patients diagnosed histologically as gynaecological malignancies (GM) from the department archive were revised. Only patients with complete clinical records, available slides and blocks were included in the study. Histopathology diagnoses made on Haematoxylin & Eosin (H&E) stained tissue slides were reviewed by three histopathologists. Histopathology diagnoses were re-classified according to the WHO classification for gynaecological malignancies 2007 revised in 2013. Histochemical stains and immunohistochemical stains were used when needed.

Ethical approval was obtained from the ethical committee at the Ministry of Health, Khartoum state.

Data analysis was done through SPSS version 21 for Windows 7. The results were expressed in simple percentages and tables.

Results:

Clinical data, stained glass slides for 411 gynaecological malignancy patients were reviewed, patients with incomplete records or lost formalin fixed paraffin embedded blocks were excluded from the study. Clinical records, slides and paraffin blocks belonging to 374 female patients diagnosed histologically as gynaecological malignancies were studied. Distribution of histological types of GM were shown in Table.1 Cervical malignancy was the commonest gynaecological malignancy(49.2%),followed by ovarian malignancies (22.2%), endometrial malignancies were the third common type (19%), followed by vulvar malignancies (4.5%) , then vaginal malignancy (3.5%), followed by choriocarcinoma (0.5%) and last came fallopian tube carcinoma (0.3%). Table.1 also show mean age groups for GM.

Table 1: Types of GM, frequencies , percentages & mean age :

Type	Frequency	Percent	Mean age(years)
Cervical	184	49.2%	55.1
Ovarian	83	22.2%	51.2
Endometrium	74	19%	64.3
Vulva	17	4.5%	70
Vagina	13	3.5%	45.2
Choriocarcinoma	2	0.5%	43
Fallopian Tube	1	0.3%	40
Total	374	100%	55.6

Squamous cell carcinoma (NOS) was the most common subtype (76.6%). Adenocarcinoma was the second most common subtype (12.6%) (Table 2).

Table 2: Histological subtypes of cervical malignancies:

Histological subtype	Frequency	Percentage
Squamous cell carcinoma: NOS:	141	76.6%
Adenocarcinoma	23	12.6%
Other epithelial tumors:	19	10.3%
Undifferentiated sarcoma	1	0.5%
Total	184	100%

Surface epithelial tumors were the most common type of ovarian malignancy (83.3%); this group includes: serous, mucinous, endometrioid carcinomas, and malignant Brenner tumor (Table 4).

Table-3: Histological subtypes of ovarian malignancies:

Histological subtype	No	Percent
Surface epithelial –stromal tumors:	69	83.1%

Sex cord-stromal tumors:	5	6%
Germ cell tumors	2	2.4%
Others: leiomyosarcoma	1	1.2%
Metastatic carcinoma	6	7.3%
Total	83	100%

Endometrioid endometrial carcinoma was the most common subtype of endometrial malignancies (64.9%) (Table 4).

Table 4: Endometrial malignancies (histological subtypes):

Histological subtype	No	percent
Endometrioid adenocarcinoma	48	64.9%
Other carcinomas (serous,mucinous,clearcelll&squamous)	11	14.9%
Undifferentiated tumors	10	13.5%
Endometrial stromal sarcoma	4	5.4%
MMMT (Mixed Malignant MullurianTumors)	1	1.3%
Total	74	100%

Keratinized squamous cell carcinoma was the commonest subtype of vaginal malignancies (38.4%).(Table.5).

Table 5: Vaginal malignancies (histological subtypes):

Histological subtype	No	percent
Keratinized squamous cell carcinoma	5	38.4%
Clear cell adenocarcinoma	2	15.4%
Verrocus carcinoma	1	7.7%
Metastatic carcinoma	3	23.1%
Rhabdomyosarcoma	1	7.7%
Carcinosarcoma	1	7.7%
Total	13	100%

Keratinized squamous cell carcinoma was the commonest subtypes of vulvar malignancies (82.3%) (Table 6).

Table 6: Vulvar malignancies (histological subtypes):

Histological subtype	No	percent
Squamous cell carcinoma keratinized	14	82.3%
Verrocus carcinoma	1	5.9%
Carcinosarcoma	1	5.9%
Adenocarcinoma	1	5.9%
Total	17	100%

Discussion:

This study showed three common histological GM(cervical ,ovarian and endometrial malignancies) forming 90.4% of all GM. The less common types (vulvar, vaginal, fallopian

and choriocarcinoma) form about 9.6% . The patients' age ranged from 10-90 years .The mean age for all GM in this study was 52.7 years, which is rather similar to those reported by of Abuidris et al (51.3 years) at Wadmadani in Sudan[7], Yakasai et al (48.3 years)[8] and Nnadi et al[2](54 years) from Nigeria[8], Jamal et al in Pakistan(49.4 years)[9]. The mean age of patients with GM in this study ( ) is almost 8 years more than the mean age reported by Sakar et al in east India (45 years) . Younger age of GM patients in east India, may reflect having cancer at a younger age or earlier clinical presentation . On the other hand the older age of our patients may reflect lack of awareness or inability to attend healthcare services.

Cervical malignancies being the commonest type of GM in our series ,this is similar to the findings of Nnadi et al[2], and Yakasi et al[8] in Nigeria and Sakar et al in India. Abuidris et al at Wadmadani[7] and Jamal et al in Pakistan(9) found ovarian cancer to be the commonest type of GM. Cervical cancer forms half of our cases (49%);this is similar to Yakasa et al (48.6%) but less than Nnadi et al[2](67.8%), Sakar et al(61%), and higher than Abuidris et al (33.7%)[7]. Squamous cell carcinoma was the commonest subtype of cervical cancer in this study 76.6**%**, this was much lower than Abuidris et al (91.2%)[7], Nnadi et al 92%[2], Yakasai et al (87.5%)[8] and Sakar et al(95.8%)[10], Jamal et al (88%)[9]. All histological subtypes of cervical cancer were proved to be Human papilloma virus (HPV) associated[14] .

Ovarian cancer being the second common GM in our series,his is similar to Nnadi[2]et al, Sakar[10] et al, Yakasai[8] et al. While Jamal et al [9] and Abuidris et al [7]found that ovarian cancer was the commonest subtypes of GM. Surface epithelial ovarian tumor was the commonest subtype in our cases ;this is similar to Abuidris et al, Nnadi et al, Yakasai et al, Sakar et al and Jamal et al[7,2,8,10], this is in concordance to global data estimating surface epithelial tumors to be the commonest ovarian histological subtype[15]

Endometrial cancer is the third GM in our series [7,9,2,10].

Vulvar, vaginal, choriocarcinoma and fallopian tube malignancies compromised the smaller group of GM in our series which is similar to other reports,[7,8,9,10]. Yakasai found Choriocarcinoma to be the fourth GM forming 8.3% of all cases[8], compared to 0.5% in our series, Yakasai reported no vulvar, vaginal or fallopian tube malignancy in their series. Jamal found 10% of their cases to be fallopian tube cancer, this is high compared to .0.3% in our series [9] .

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Conflict of interest:

The authors declare no conflict of interest.

References:

1. Iyoke CA, Ugwu GO .Burden of gynaecological cancers in developing countries .World J Obstet Gynecol2013;2(1):1-7.
2. NnadiD ,SinghS ,AhmedY, SiddiqueS, BilalS .Histo-pathological features of genital tract malignancies as seen in a tertiary health centre in north-western Nigeria: A 10-years review. Ann Med Health Sci Res 2014;4(suppl 3):213-7.
3. Hamad HM. Cancer initiatives in Sudan: Annals Oncol 2006 Jun;17suppl 8 :viii32-viii36.
4. Saeed IE, Abuidris DA ,.Mohamed KEH , Mohammed SI . Cancer Registry in Sudan: A brief Overview ,the internet journal of epidemiology .2013 11(2)1-5 .
5. Saeed IE , Weng H Y , Mohamed HA & Mohammmed SI. Cancer incidence in Khartoum ,Sudan:First results from the Cancer Registry,2009-2010 . 2014 Cancer Med . 2014 Aug 3(4) :1075-1084 .
6. Mohammed ME ,Hassan AM ,Abdelhadi HA ,Elsadig MG ,Adam DM ,Elmamoun K et al. Burden and Pattern of cancer in Sudan, 2000-2006 ..British J Med & Med Res. 2014 ,4(5): 1231-1243
7. AbuidrisDA, Ibnoof RS ,ElsanousiME ,Eltayeb EA, ElGailli E M .Gynecological Malignancies Managed in The institute of Nuclear Medicine and Oncology ,Wadmadani –Sudan During 1999-2005. Gazira J of Health Sci 2008.4(1) 1-9.
8. Yakasai I A, UgwaEA ,Otubu J. Gynecological malignancies in Aminu Kano Teaching Hospital Kano: A 3year review .Niger J ClinPract 2013;1691):63-6.
9. Jamal S,Mamoon N ,Mushtaq S ,Luqman M, Mogal S:The pattern of gynaecological malignancies in 968 cases from Pakistan. Ann Saudi Med 2006;26(5)382-384.
10. Sarkar M, KonarH ,Raut D .Clinicopathological Features of Gynaecological Malignancies in a Tertiary Care Hospital in Eastern India: Importance of Strengthening Primary Health Care in Prevention and Early Detection. Asian Pacific J Cancer Prev 2013. 14(6)3541-3547 .

11. Haseeb MA. An outline of the history of Medical Research Institutes in the Sudan .Sudan J paediat 2013;13(2):103-114.
12. EL Hassan AM, The history of medical research in Sudan http://megaslides.com/doc/3871/the-history-of-medical-research-in-sudan.
13. Awaelkarim KD ,Mohamadani AA &Barberis M . Role of pathology in sub-Saharan Africa : An example from Sudan. Patholo &lab Med Inter. 2010:2 49-51, www.dovopress.com .
14. Kumar, Abbas, Aster. Robbins &Cotran. Pathological Basis of Disease, 9th ed , Elsevier ,2015,;2(22):1004.
15. Mills AE, Carter D,Greenson JK, et al .Sternberg's Diagnostic Surgical pathology,5th ed Lippincott,Williams&Wilkins,2010;2(54):2278.