Original Article

Histopathologic Pattern of Ovarian Tumours at University of Maiduguri Teaching Hospital (UMTH), Maiduguri.

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ABSTRACT

Background: Ovarian tumors are common reasons for referral to the gynecologist. The management of patients with ovarian tumor depends on several factors and on the histological type of the tumor. Information regarding the histopathological distribution of ovarian tumors from developing countries needs constant updating so as to lessen our dependence on western data. **Aims and objectives**: To review the histopathologic pattern of ovarian tumors at University of Maiduguri Teaching Hospital (UMTH), Maiduguri. **Methodology**: This was a 5-year retrospective review of all ovarian tumor specimen received at the histopathology department of UMTH from 1st September 2015 to 31st August 2020. Data was analysed using Statistical Product for Service Solutions software (SPSS), version 25 (IBM Chicago III, USA). All data are presented as absolute values and percentages. Figures and simple percentages presented as tables were used to depict the findings. **Result**: A total of 204 samples were analyzed, with age range of 2-70 years. Surface epithelial tumor accounted for 39% of cases, followed by functional cyst 34%, while sex cord stomal tumor accounted for 9% of cases. The commonest malignant ovarian tumor was granulosa cell tumor, seen in 7% of patients. The commonest presentation was abdominal pain and swelling accounting for 52% and 27% respectively irrespective of the type of tumor. A case of collision tumor and one case of synchronous tumor were encountered. **Conclusion**: Benign ovarian tumors are far more common than their malignant counterparts in our environment.

Keywords: Benign Tumor, Histopathological Features, Maiduguri, Malignant Tumor, Ovarian Tumor.

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INTRODUCTION

Ovarian tumors are constant sources of challenge to gynecologist and pathologists because of their wide spectrum of clinical and morphological features.[1] The likely increase in the incidence of ovarian tumours in developing countries from decreasing fertility rate and increased use of ovulation induction drugs calls for greater effort in the study of these tumors in these regions.[2] In view of this and the need for a comprehensive literature on ovarian tumors in Africa, which will help in reappraising our dependence on western data, this study reviewed the histopathologic pattern of ovarian tumors at UMTH.

METHODOLOGY

This was a retrospective review of ovarian tumor resections received at the histopathology department of the University of Maiduguri Teaching Hospital (UMTH) from 1st of September 2015 to 31st of August 2020. This is the only histopathological centre in Maiduguri during the study period, hence, ovarian specimen is sent from gynecologists and surgeons of different private and public hospitals in Borno state with a projected population of 5,115,017 people[3] and neighboring states.

The original examination request forms of all histology reports of ovarian tumors, which were kept in the archival material of the pathology unit along with duplicate copies of the histology reports were sorted and studied in detail. Data was classified according to the latest WHO Classification (2014) into epithelial tumors, germ cell tumors, sex cord–stromal tumors and others. Cases were distributed according to sample origin, laterality, size, and histogenesis. Any specimen that was ovarian in origin, and in which surgery was performed primarily due to an ovarian pathology was included in the study. The exclusion criteria were ovarian specimen from TAH + BSO in which the primary lesion was not ovarian or had normal ovarian findings and cysts removed while performing surgery for ectopic gestation. Presenting complaint was obtained from the request form. Tumor size was included in most forms but there was no staging.

Total number of ovarian tumor specimen retrieved was 207 out of which 3 forms were not properly filled and were excluded from the analysis. Nine had no tumor size. Other information captured were patients' age, principal presenting complaint(s), type of surgery performed, where the surgery was done, histopathological diagnosis and size of tumor received.

Data was analysed using Statistical Product for Service Solutions software (SPSS), version 25.0. All data are presented as absolute values and percentages. Figures and simple percentages presented as tables were used to depict the findings.

RESULTS

During the study period, a total of 207 ovarian samples were received at the UMTH, out of which 3 were excluded from the study because they were not properly filled. However, twelve forms had no tumor size, and hence they were excluded in tumor size analysis giving a retrieval rate of 94%.

Table 1: Age distribution of patient

<10	1	0.5
10-19	10	4.9
20-29	73	35.7
30-39	53	26.0
40-49	40	19.6
50-59	15	7.4
>60	12	5.9
Total	204	100

Table 2: Age distribution and histopathology diagnosis of benign ovarian lesions

Diagnosis	Age of patient							Frequency
	<10	10-19	20-29	30-39	40-49	50-59	>60	(%)
FUNCTIONAL CYSTS								69 (39%)
Follicular cyst	1	0	6	6	5	0	0	18 (9%)
Corpus Luteum cyst	0	0	10	7	6	0	0	23 (11%)
Haemorrhagic cyst	0	4	19	4	1	0	0	28 (14%)
BENIGN EPITHELIAL TUMORS								71 (40%)
Serous cystadenoma	0	4	19	12	15	4	3	57 (28%)
Mucinous cystadenoma	0	0	3	3	1	2	2	11 (5%)
Benign Brenner's tumor	0	0	0	0	0	0	2	2 (1%)
Seromucinous cystadenoma	0	0	0	1	0	0	0	1 (0.4%)
BOARDERLINE EPITHELIAL TUMORS								
Borderline mucinous tumors	0	0	0	1	0	0	1	2(1)
Borderline serous tumors	0	0	0	0	1	1	0	2(1)
MALIGNANT EPITHELIAL TUMORS								
Serous adenocarcinoma	0	0	0	1	1	1	0	3(1%)
Mucinous carcinoma	0	0	1	0	0	0	0	1(0.4%)
BENIGN GERM CELL TUMOUR								
Mature cystic teratoma	0	2	8	7	4	0	1	22 (11%)
MALIGNANT GERM CELL TUMOR								
dysgerminoma	0	0	0	0	1	0	1	1(0.4%)
BENIGN SEX CORD STROMAL TUMOR								
Fibroma	0	0	2	1	0	0	1	4 (2%)
Thecoma	0	0	0	1	0	0	0	1 (0.4%)
MALIGNANT SEX CORD STROMAL TUMOR								
Granulosa cell tumor (Adult Type)	0	0	0	4	2	6	1	14(7%)
NON-NEOPLASTIC								12(6%)
Endometrioma	0	0	4	2	2	0	0	8(4%)
Tubo-ovarian abscess	0	0	0	3	0	1	0	4 (2%)
METASTATIC								
Krukenberg tumor	0	0	0	1	0	0	1	2(1%)
TOTAL								204 (100%)

About 90% of the samples were from within Maiduguri metropolis, with UMTH constituting the highest number of patients as shown in Table 1.

The ages ranged from 2-70 years, with the mean age at presentation of 34.5 ±12.39. More than half (61.2%) of the total samples were from women <40 years with a total of 166 samples from patients between 20 and 49 years of age.

Table 3: Surgical procedure performed

Type of surgery	Frequency	Percent	Benign	Borderline	Malignant
Unilateral cystectomy	115	56.4	110	1	4
TAH+BSO	36	17.2	26	1	9
Unilateral oophorectomy	32	15.7	26	1	5
Bilateral cystectomy	12	5.9	12		
TAH+BSO+Omentectomy	5	2.5	4		1
Bilateral oophorectomy	3	1.5	2		2
TAH+BSO+Omentectomy+ Appendectomy	1	0.5		1	0
Total	204	100.0	179	4	21

TAH-Transabdominal hysterectomy, BSO- Bilateral salpingo oophorectomy.

Table 4: Commonest presentation seen in patients with ovarian tumors

Clinical presentation	Frequency	Percent
Abdomenal\pelvic pain	107	52.0
Abdomenal swelling\mass	55	27.0
Abnormal vaginal bleeding	20	9.8
Infertility	13	6.4
GIT symptoms	3	1.5
Abnormal vaginal discharge	3	1.5
Weight loss	3	1.5
Total	**204**	**100.0**

Table 5: Source of specimen

	Frequency	Percent
UMTH	91	44.6
SSH	83	40.7
Private hospital	9	4.4
GH Damaturu	8	3.9
Nguru	8	3.9
USUMH	3	1.5
Potiskum	2	1.0
Total	**204**	**100.0**

Table 2 shows that benign ovarian tumors were the most encountered, accounting for more than 90%, with serous cyst adenoma being the commonest seen mostly between ages 20-49. Serous cyst adenomas present commonly with abdominal pain and swelling, which is also the commonest presentation among all patients. Borderline tumors were the least common accounting for about 2% and seen in patient above 30year of age. Malignant ovarian tumor accounted for the remaining 8%. One case of Krukenberg tumor was found in a 30-year-old in whom the primary tumor was not identified.

Table 6: Size distribution of ovarian tumor received(cm) at University of Maiduguri Teaching Hospital.

Range	Frequency	Percentage
0-5	76	39.0
6-10	58	29.7
11-15	37	19.0
16-20	16	8.2
21-25	6	3.1
26-30	1	0.5
>31	1	0.5
Total	**195**	**100**

A collision tumor, in which dysgerminoma co-existed with granulosa cell tumor was recorded. This was reported as a dysgerminoma in this study. Another case of serous cyst adenoma co-existing with mucinous cyst adenoma synchronously in different ovaries was reported as a mucinous cyst adenoma due to its larger size. A total of 19 primary ovarian malignancies were seen during the study period, out of which only 9 had TAH+BSO, and one had TAH+BSO + omentectomy. The remaining 9 had unilateral cystectomy or oophorectomy, most of which were done outside the teaching hospital. This is represented in table 3.

Table 4 shows the commonest presentation seen in patients. Almost all patients presented with more than one symptom, only one most predominant symptom was documented for each patient. Weight loss was however seen in only 3 patients, one each in those with borderline mucinous tumor, mucinous carcinoma, and granulosa cell tumor. The commonest presentations were abdominal pain and distension. Out of the 23 patients with corpus luteum cyst, three of them presented primarily with infertility. The largest tumour as seen in table 6 measured 36cm which was a serous cyst adenoma.

UMTH-University of Maiduguri Teaching Hospital, SSH-State Specialist Hospital, GH Damaturu- General Hospital Damaturu, USUMH- Umaru Shehu Ultra-Modern Hospital.

DISCUSSION

This study showed that benign lesions accounted for up to 90% of all ovarian specimen received, with 2% being borderline tumors and 8% malignant. A similar finding was demonstrated in a study conducted at UMTH 2 decades ago where benign ovarian tumors constituted 79.3% of cases with the remaining 20.7% being malignant. In Benin city, Nigeria, Forae and colleagues found that the frequency of benign and malignant ovarian lesions was 84.7% and 15.3% respectively;[3] similar findings were obtained by Patel et al where benign tumors comprised 93.2%, borderline tumors 0.6% and malignant tumors 6.2%.[4] There was a much lower incidence of malignant ovarian tumors in this study compared to that by Sofi et al where 56.3% were benign, 1.7% were borderline and 42.0% were malignant. The reason for this difference could be the higher life expectancy in these countries compared to Nigeria.

Epithelial tumours were found to be the most common benign tumors encountered in this study. It accounted for 40% of all tumors, followed closely by functional ovarian cyst seen in 39%. Of the benign epithelial tumors, serous cystadenoma was the commonest encountered, this is similar to the study by Gupta et al where it accounted for 18.9% of all ovarian tumors encountered over 3 years[5] and 18.4% by Choudhary and colleagues.[6] These findings are in contrast to that of Patrick et al and Obed et al in North-East and South-South, Nigeria, where germ cell tumor was the commonest benign tumor with mature cystic teratoma 31.5% and 67.2% respectively.[2,7] The reason for this variation remains un-established, however, it may partly be attributed to increased westernization, increased awareness and acceptance of contraception and a dietary shift to a higher fat containing diet compared to 2 decades ago.

Unlike many studies which showed epithelial ovarian tumors as the commonest malignant tumors, granulosa cell tumor was the commonest, in our study accounting for 6.4% of the total ovarian tumors and occurring after the 3rd decade of life. This is similar to the finding by Bobzom and Unuigbe in Northeastern Nigeria, where granulosa cell tumor was the commonest malignant ovarian tumor seen, occurring in 4% of total ovarian tumor.[8] This finding is in contrast to those in several studies globally where serous cystadenocarcinoma, which was 2nd in this study, was the commonly encountered malignancy with granulosa cell tumor been the least common.[8-11]

The reason for this is not clear, however perhaps this shows that there is a change in the trend of ovarian malignancies and further studies need to be conducted in this respect. Only two (1.0%) cases of Krukenberg tumor were recorded during the study period, which was much similar to that by Agarwal et al who found 0.8% of Krukenberg tumour.[11]

Most studies agree that ovarian tumors cut across all age groups, but only a few have documented ovarian tumor under the age of 10. The age range for ovarian tumors in this study was 2-70 years, with the highest incidence among women of reproductive age between 20-49 years of age, this is in tandem with the finding by Patel et al where the age range was 4-70 years, and highest number was seen between ages 20 and 40 years.[4] These results were in agreement with findings in most literature stating that, ovarian tumors can occur at any age but their peak incidence is in the reproductive age group.[10,12,13] The youngest patient was a 2 year old child with follicular cyst, this is in contrast with Patel et al where the youngest patient was a 4 year female child with immature teratoma, and the age was much higher than that of Gupta et al who reported two cases of germ cell tumor in 6 day old neonates.[4,5] The oldest patient was a 70 year old woman in whom a collusion tumor finding of dysgerminoma and granulosa cell tumor in the same ovary was found. In this study, it was reported as a dysgerminoma because it had more clinical relevance for the patient. Having two different tumors in an ovary is an extremely rare occurrence.[14] Similar finding was however reported by Ozbey et al, Ajay et al and Sengupta et al where serous papillary adenocarcinoma and adult granulosa cell tumor, serous papillary cystadenocarcinoma and teratoma, and dysgerminoma and serous cystadenocarcinoma respectively were documented in case studies.[14-16] A case of serous cystadenoma concurrent with mucinous cystadenoma synchronously in different ovaries was reported as a mucinous cystadenoma in this study, this was because it was larger and had more clinical relevance. The same finding was

reported by Mondal et al and Sethi et al.[17,18]

Irrespective of the histological type of ovarian tumor, the commonest symptom in this study was pelvic pain which was present in 52% of patients, followed by abdominal mass in 27% and vaginal bleeding in 9.8%. This is comparable to the finding by Patel et al, Sharadha et al, Agrawal et al and Sofi et al, and in contrast to those by Choudhary et al who had a relatively higher percentage with 92.4% presenting with abdominal pain and 86.6% with abdominal mass.[4,6,9,11,19] This wide variation is because in the latter study more than one presentation was recorded for each patient. In this study and others with similar findings, however, only one predominant presentation was documented per patient.

Out of the 204 studies recorded, 115 (56.4%) cases were unilateral, and most of the malignant tumors (55%) had TAH+BSO with or without omentectomy. This concurs with the study by Agarwal and Sofi et al.[11, 19] Only 195 tumors had tumor size documented, keeping in mind that the exact tumor size might not have been recorded as it can be difficult to bring out some tumors as a whole. The 195 that had documentation for tumor size were included and analyzed in this study, because excluding them would result in a significant reduction in the total retrieved reports

and will drastically affect the result. Tumor size ranged from 2-36 centimeters, with 68.7% being less than 10 cm, this finding is comparable to that by Agarwal and Gupta et al where 55.8% and 56.5% respectively were less than 10 cm.[5,11] Most studies didn't include size of tumor probably due to the tumors not being completely excised at surgery or rupture of the most cystic tumors. Hence, from the present study size is not an important factor in accessing the nature of tumor, as size range in benign, borderline, and malignant tumors were almost similar.

The main strength of this study is that it gives the most comprehensive picture of the current state of ovarian tumor histological pattern in our center, as the last work done was 20 years ago.[7] The observations and results will be a valuable baseline information regarding pattern of ovarian tumors in our population. More studies of prospective nature to define the risk factors in our population and to identify specific etiological factors are recommended. The limitation of the study is that it is a single-center retrospective study.

In conclusion, ovarian tumors are common in our center and benign tumors remain the commonest type as in most studies.

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