International Journal of Research in Medical Sciences
Anitha PV et al. Int J Res Med Sci. 2021 Apr;9(4):1010-1014
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20211342

Original Research Article

Histopathological profile of ovarian tumors in a tertiary care center: a descriptive study

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Received: 02 March 2021
Accepted: 16 March 2021

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ABSTRACT

Background: Ovarian neoplasms are a heterogeneous group of tumors with varied clinical, morphological and histological features. Ovarian cancer accounts for about 3% of all cancer in females and is the 5th most common cause of death due to cancer because most ovarian tumors spread beyond ovary by the time of diagnosis. The objective of the study was to document the histological pattern and prevalence of ovarian tumors in specimens received at department of pathology government medical college Alappuzha.
Methods: This was a prospective study of 18 months duration which comprised of 245 cases of ovariectomy and ovariotomy specimens received in the department of pathology, govt. T.D medical college Alappuzha, Kerala. After detailed and thorough gross examination of the specimens, bits from representative areas were routinely processed and stained with H and E. Tumors were classified as per WHO classification. Appropriate immunohistochemical studies were performed wherever required.
Results: Out of 245 cases studied, majority were benign tumors (78.36%), followed by malignant tumors (15. 11%). Borderline tumors comprised (6.53%) of the total cases. Age groups studied ranged from 11-70 years. Epithelial tumors were the most common (76.32%) followed by germ cell tumors (17.55%), sex cord stromal tumors (5.03%) and carcinoma arising in germ cell tumors (0.81%). Serous cystadenoma was found to be the commonest benign tumor and serous cystadenocarcinoma was the commonest malignant ovarian neoplasm.
Conclusions: Surface epithelial tumors were the most common ovarian tumors. The maximum number of tumors were noted in the age group 21-40 years. Malignant tumors were common above 40 years.

Keywords: Ovarian tumors, Serous cystadenoma, Germ cell tumors, Sex cord stromal tumor

INTRODUCTION

Ovarian cancer accounts for 3% of all cancer in females and is the 5th most common cause of death due to cancer in the United States, because most ovarian tumors spread beyond the ovary by the time of diagnosis.[1-4]

In most of the population-based cancer registries in India, ovarian cancer is the 3rd leading type of cancer among women after cervical and breast cancer.[5-7] Ovarian neoplasms affect significant number of women and has the worst prognosis among all gynecological malignancies. Tumors of ovary encompass a complex wide spectrum of neoplasms involving a variety of histological patterns ranging from epithelial, mesenchymal, specialized hormone secreting, germinal and embryonal cells.[8]

As ovarian tumors cannot be confidently distinguished from one another on the basis of their clinical, radiological or gross characteristics, it is important to study and determine the histological pattern of ovarian neoplasms to achieve the optimum treatment response. About 80% of ovarian tumors are benign which occur

mostly in women of age group twenty to forty-five years. Borderline tumors occur at slightly older age and the malignant tumors in the older women between 45-65 years.[1,2]

While some tumors have distinctive features and are hormonally active, most are non-functional and tend to produce mild symptoms until they reach a large size. Some of these tumors tend to be bilateral. Abdominal pain and distension, urinary and gastrointestinal tract symptoms due to compression by the tumor and vaginal bleeding are the most common symptoms.[10]

Tumor laterality also indicates the nature of lesion, for example, sex cord stromal tumors are almost always confined to single ovary, similarly epithelial tumors and metastatic tumors to ovary are usually bilateral.[11]

Histogenesis of ovarian tumors involves mainly four components namely surface epithelium, germ cell, sex cord and specialized ovarian tumours.[5]

The diagnosis of ovarian tumors occurs at a late stage since ovary is a retroperitoneal organ.

Among the ovarian neoplasms about 80% are benign with cystic, solid or mixed characteristics.[6] The remaining 20% is malignant which may be fatal. Peak incidence of epithelial ovarian cancer is seen in the age group of 50-60 years.[14]

Identification of various histological patterns of ovarian tumors is very important for management of the patient, as the diagnosis and prognosis of ovarian tumors depend upon its histological type.[15]

METHODS

Design of study

Design of study was descriptive study.

Study period and duration

The study was conducted a period of eighteen months from January 2017 to June 2018.

Sample size and study population

All ovariectomy and ovariotomy specimens received in the department of pathology during the study period i.e., Jan 2017 to June 2018.

Inclusion criteria

All ovariectomy and ovariotomy specimens received in the department of pathology T. D. medical college Alappuzha during the study period were included in the study.

Exclusion criteria

Oophorectomy specimens received along with total abdominal hysterectomy and post chemotherapy specimens were excluded from the study.

Data analysis

Data analysis was based on histopathological typing of the received specimens.

Statistical analysis

All statistical analysis was carried out using SPSS.

Study procedure

Tissue samples from the primary tumor were fixed in 10% buffered formalin and then processed. Section of 4 micrometers will be cut and stained with H and E for histopathological typing and grading of tumor.

Ethical considerations

Study was conducted on specimens coming routinely to pathology department. Consent was routinely taken. The extra tissue section studied caused no expense to the patient. Confidentiality of the patient was maintained during every stage of the study. No other ethical issues involved. Study was commenced only after getting ethical committee clearance.

RESULTS

A total no of 245 cases of ovarian tumors received in the department of pathology during a period of 18 months from January 2017 to June 2018 were included in this study and analysis was done. In a total of 245 cases studied, all were primary ovarian tumors. Out of these 78.36% cases were benign, 15.11% cases were malignant and 6.53% cases were borderline. Epithelial tumors were the most common histological type (80 %), followed by germ cell tumors (16.73%) (Figure 1).

The age of patients ranged from 11-70 years, with the youngest being 11 years of age and the oldest 70 years. 103 cases (42.04 %) were in the reproductive age group (21 to 40 years). The peak incidence of epithelial tumors was found to be between 31 to 40 years (23%) and that of germ cell tumors was found to be between 21 -30years (45 %). Most of the cases were unilateral (97.55%) and 2.44% were bilateral.

The most common benign tumor was serous cystadenoma (Figure 2A) 42.85 %, followed by mature cystic teratoma 16.32 % and mucinous cystadenoma (Figure 2B) 14.69 %. Serous cystadenocarcinoma 5.71 % was the most common malignant tumor followed by adult granulosa cell tumor (Figure 4B) and endometrioid carcinoma (Figure 3C) 2.04% each.

Table 1: Histopathological spectrum of ovarian tumors as per WHO classification.

WHO classification	No. of cases	%
Epithelial tumors		
Serous tumors		
Serous cystadenoma	100	40.81
Serous cystadenofibroma	5	2.04
Borderline serous tumor	5	2.04
Serous cystadenocarcinoma	14	5.71
Mucinous tumors		
Mucinous cystadenoma	36	14.69
Borderline mucinous tumor	11	4.48
Mucinous cystadenocarcinoma	5	2.04
Endometrioid tumors		
Endometrioid carcinoma	5	2.04
Clear cell tumors		
Clear cell carcinoma	1	0.4
Brenner tumors		
Benign Brenner tumor	2	0.8
Mixed epithelial benign tumors		
Seromucinous cystadenoma	1	0.4
Benign Brenner tumor with mucinous cystadenoma	1	0.4
Sex cord stromal tumor		
Adult granulosa cell tumor	5	2.04
Fibroma thecoma	7	2.87
Poorly differentiated sertoli cell tumor	1	0.4
Germ cell tumors		
Benign mature cystic teratoma	40	16.32
Yolk sac tumor with immature teratoma	1	0.4
Dysgerminoma	2	0.81
Carcinoma arising from mature cystic teratoma		
Adenocarcinoma	1	0.4
Adenosquamous carcinoma	1	0.4
Total	245	100

There were 11 cases of mucinous borderline tumors and 5 cases of serous borderline tumors (Figure 2C and D). Of the 2 mixed epithelial tumors, one was seromucinous cystadenoma and other was benign Brenner tumor with mucinous cystadenoma (Figure 3A).

Out of 105 cases of serous cystadenomas, 5 were serous cystadenofibromas of which 3 were bilateral. Bilateral mucinous cystadenoma was seen in two cases.

There were 14 cases of serous cystadenocarcinoma, out of which one was bilateral. Two cases showed malignancy arising in mature cystic teratoma, namely an adenocarcinoma and an adenosquamous carcinoma. Endometrioid carcinoma (Figure 3C) comprised 5 cases and there was one case of clear cell carcinoma (Figure 3B).

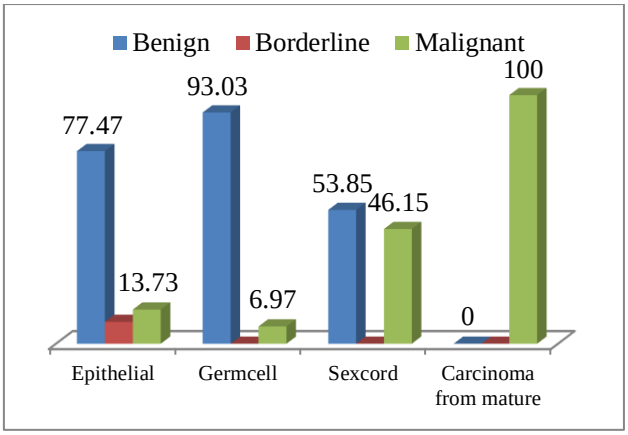

Figure 1: Nature of tumor.

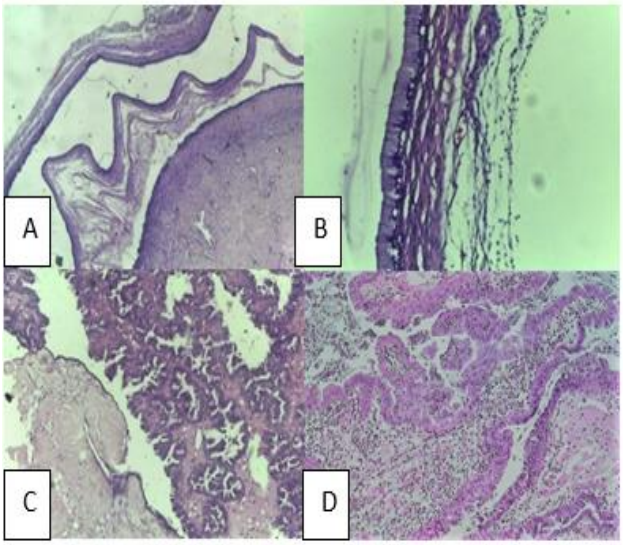

Figure 2: (A) Serous cystadenoma, 100X, (B) Mucinous cystadenoma, 100X, (C) Borderline serous tumor, 400X, (D) Borderline mucinous tumor, 400X. (H and E).

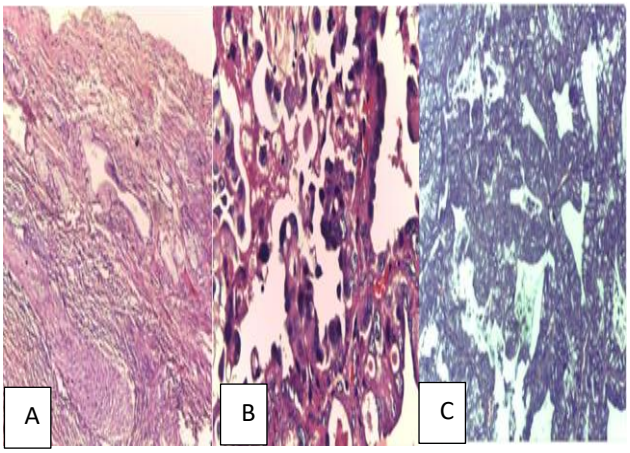

Figure 3: (A) Benign Brenner with mucinous cystadenoma, 100X, (B) Clear cell carcinoma, 400X. (C) Endometrioid carcinoma, 400X. (H and E).

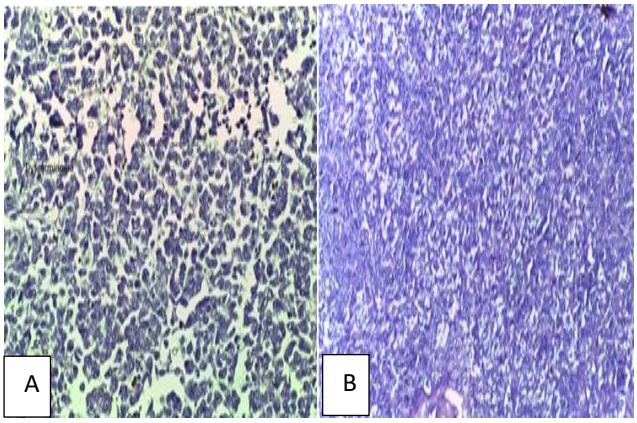

Figure 4: (A) Dysgerminoma, (B) Adult granulosa cell tumor. (H and E, 400X).

DISCUSSION

Ovarian cancer accounts for 3% of all cancers in women. According to surveillance epidemiology and end results data, ovarian tumors form about 27% of all female genital cancers and account for 52% of death caused by tumors of the female genital tract.[12] Most ovarian tumors cannot be distinguished from one another on the basis of their clinical or gross characteristics alone. Age of the patient as well as the laterality of the tumor may provide a clue to their nature at times.[13]

Determination of various histological patterns of ovarian tumors is very important for the management of patient, as the diagnosis and prognosis of ovarian tumors depend upon its histological type. Hence the relevance of this study.[16]

In the present study, all 245 ovarian tumors were primary. Most of them were epithelial tumors (76.32%) which were comparable with similar studies.[17-19] Germ cell tumors accounted for 17.55% of the total.

Majority were benign tumors in this study (78.36%), followed by malignant tumors (15.11%) and rest were borderline (6.53%).

The age patients ranged from 11-70 years and this was supported by the study of Swami et al where the youngest patient was 12 years old and oldest was 70 years old.[23] Majority of ovarian tumors (54.28%) were seen in the age group between 21-40 years, which was consistent with the observations in similar studies.[20]

In the present study majority of tumors were unilateral 97.55%. Only 2.44% were bilateral. This was consistent with various other studies.[21,22]

Among the epithelial tumors, benign epithelial tumors were the commonest type 77.95% followed by malignant epithelial tumors 13.44%. Borderline epithelial tumors comprised 8.6% of the total cases (24).

In the present study the maximum number of epithelial tumors (60.63%) were noted in the 31-50-year age group. All malignant tumors were seen in the age group above 40. The result corroborated with similar studies.[19,21] Among the histo-morphological types of epithelial tumors, serous tumors (52.24%) were the most common followed by mucinous tumors (21.22%) and the least common were neoplasms of endometrioid type (2.04%).

Serous cystadenoma was the commonest benign epithelial tumor (38.77%) followed by mucinous cystadenoma (14.69%). Serous cystadenocarcinoma (4.48%) was the commonest malignant epithelial tumor. Mature cystic teratoma was the most frequent benign germ cell tumor (97%). Malignant tumors included dysgerminoma and yolk sac tumor with immature teratoma. Maximum number of germ cell tumors was seen below 30 years of age and was found to be uncommon after the age of 60.[19]

In the present study majority of sex cord stromal tumors were benign (61.53%) comparable, to the findings of Jindal (75%).[21] The age range of sex cord stromal tumors was 40-70 years. Adult granulosa cell tumor comprised 2.04% of all ovarian tumors. The frequency was consistent with findings of Pilli et al who recorded it as 3.54%.[20] In the present study two of the cases were carcinoma arising from mature cystic teratoma comprising 0.81% of all ovarian tumors.

CONCLUSION

Ovarian neoplasms affect significant number of women and has the worst prognosis among all gynecological malignancies. Tumors of the ovary encompass a complex spectrum of neoplasms involving a variety of histological patterns ranging from epithelial, mesenchymal, specialized hormone secreting, germinal and embryonal cells. Significance of this study lies in the fact that ovarian tumors cannot be distinguished from one another on the basis of clinical, radiological and gross characteristics alone. It is important to determine the histological pattern of ovarian tumors to achieve optimum treatment response as prognosis depends up on the degree of differentiation.

To conclude histopathological profile of ovarian tumors remains to be the gold standard and has an important role in the treatment part as well as in determining the prognosis.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Anitha PV, Ali SKU. Histopathological profile of ovarian tumors in a tertiary care center: a descriptive study. Int J Res Med Sci 2021;9:1010-4.