Section: Pathology

Original Research Article

HISTOPATHOLOGICAL PATTERNS OF OVARIAN TUMOURS - A RETROSPECTIVE STUDY IN A TERTIARY CARE CENTRE

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Received : 22/12/2023
Received in revised form : 08/02/2024
Accepted : 24/02/2024

Keywords:
Ovarian tumours, Benign, Sex-cord stromal, Benign Serous Cystadenomas, Surface epithelial.

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DOI: 10.47009/jamp.2024.6.1.310

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (1); 1563-1567

Abstract

Background: Ovarian cancer ranks eighth among female cancer-related deaths globally, and accounts for 8% of all cancers in India. **Aim** To study the incidence and distribution of various histopathological patterns of ovarian tumours in a tertiary care centre in Tamil Nadu. **Material and Methods:** A retrospective analysis of 191 ovarian tumours diagnosed over a period of five years from January 2019 to December 2023 at the Department of Pathology, Govt Vellore Medical College, was performed. Tumours were classified according to the 2020 WHO classification. **Results:** This study included a total number of 191 cases of ovarian neoplasms. The age at incidence of ovarian tumours ranges from 2 to 72 years. The incidence of ovarian tumours was the highest at 21-30 years of age. Of the ovarian tumours,91.6% were benign, 0.5% borderline, and 7.9% malignant. Surface epithelial tumours constituted the majority of ovarian tumours (75 %), and sex-cord stromal tumours constituted the least (3%). There were also 5 tumours with mixed morphological features. **Conclusion:** The study concluded that most ovarian tumours were benign, followed by malignant and then borderline tumours. Surface epithelial tumours are the most common histopathological patterns of ovarian tumours.

INTRODUCTION

In 2020, according to the latest global cancer burden data, Ovarian cancers rank eighth among female cancer-related deaths. Five percentage of cancer-related deaths in females worldwide is due to ovarian cancer. [1] In India, it accounts for 8% of all cancers in different parts of the country. The incidence of ovarian cancer varied significantly between groups. According to the Global Cancer Observatory 2018, the age-standardised incidence rate of ovarian tumours in India was 3.8-5.5 cases per 100,000 females per year,[2] whereas in 2013, this was 10.2/100,000 females.[3]The Indian Cancer Registry data project states that the ovary is an important location for carcinoma, comprising up to 8.7% of all cancers in various parts of India.[4] The age-adjusted incidence rate of ovarian cancer varies between 5.4 and 8 per 100,000 people in different parts of the country.[5,6] Ovarian neoplasms are uncommon in children and represent a very small proportion of all ovarian tumours. [7,8] There are only a very few studies in our part of the country to show the distribution of various histopathological types of ovarian tumours.

MATERIALS AND METHODS

A retrospective analysis of 191 ovarian tumours diagnosed in the Department of Pathology, Government Vellore Medical College, over the last five years (January 2019-December 2023) was performed.

Inclusion Criteria

All neoplastic ovarian lesions received in the Department of Pathology over the last five years were included in the study.

Exclusion Criteria

All non-neoplastic and inflammatory ovarian lesions were excluded.

The data of patients who presented with ovarian tumours over the past five years were analysed. Tumours were classified according to the 2020 WHO classification.

RESULTS

A total of 17,268 specimens were obtained in the Department of Pathology, Government Vellore Medical College, over the last five years. Of these,

ISSN (O): 2687-5365; ISSN (P): 2753-6556

there were 867 neoplastic lesions of the female genital tract. Of the neoplastic lesions of female genital tract, there were 191 cases of ovarian tumours. Thus, Ovarian tumours constitute 22% of the tumours of the female genital tract. The incidence of ovarian tumours ranges from 2 to 72 years of age. The youngest patient was 2 years old, who presented with mature cystic teratoma, and the oldest patient was 72 years old, who presented with mucinous cystadenoma. The age-wise incidence of ovarian tumours is shown in Table 1. The incidence of tumours is the highest at 21-30 years of age. Of the 191 cases studied, 175 (91.6%) were benign tumours, one case (0.5%) was borderline tumour, and 15 (7.9%) were malignant tumours. In our study, 186 patients presented with unilateral tumours and five patients presented with bilateral tumours. There were 143 cases (75 %) of surface epithelial tumours, five cases (3%) of sex cord stromal tumours, and 43 cases (22%) of germ cell tumours. [Table 2, Figure 1]

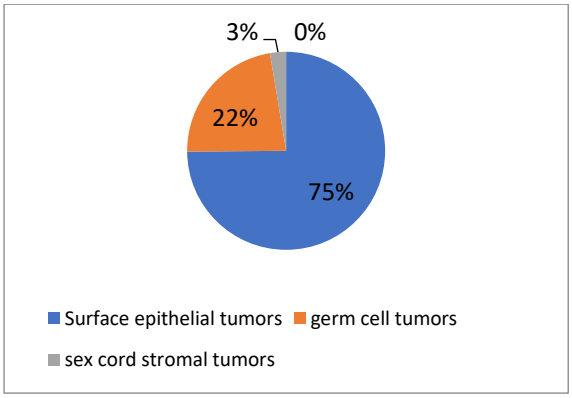


Figure 1: Distribution of ovarian tumours

Of the surface epithelial tumours, 97 were serous tumours, of which, 94 were benign and 3 were malignant. There were 40 cases of mucinous tumours, of which 39 were benign and one tumour was of borderline category. There were three cases of Benign Brenner tumours and one case of transitional cell carcinoma of the ovary. There was also one case of poorly differentiated carcinoma and one case of clear cell carcinoma. [Table 3]. There were five cases of sex cord stromal tumours which constituted 3% of ovarian tumours. Of the five-sex cord stromal tumours, two were benign and three were malignant. [Table 4]. Of the 43 cases of germ cell tumours, 37 were mature cystic teratomas, three were dysgerminomas, two were mixed germ cell tumours, and one was a mature cystic teratoma with an invasive squamous cell carcinoma component (Table 5). Some of the tumours presented with mixed morphological features, such as mature cystic teratoma with Dysgerminoma; Mixed germ cell tumours (Teratoma with Embryonal carcinoma and yolk sac tumour), mucinous cystadenoma with fibroma, mature cystic Teratoma with Invasive squamous cell carcinoma, and serous cystadenoma with Brenner tumour. [Table 6]

Table 1: Age wise distribution of Ovarian tumours

Age of incidence	Number	Percentage
<10 years	2	1%
11-20 years	12	6.3%
21-30 years	66	34.5%
31-40 years	58	30.4%
41-50 years	34	17.8%
51-60 years	10	5.2%
61-70 years	8	4.3%
71-80 years	1	0.5%

Table 2: Distribution of Ovarian tumours

Tumours	Benign	Borderline tumours	Malignant	Total
Surface Epithelial Tumours	136	1	6	143
Sex cord stromal tumours	2	-	3	5
Germ cell tumours	37		6	43
Total	175	1	15	191

Table 3: Distribution of Surface Epithelial Tumours

Name of Tumour	Benign	Borderline	Malignant	Total
Serous Tumours	94	-	3	97
Mucinous Tumours	39	1		40
Seromucinous Tumours				
Brenner Tumour	3		1	4
Clear Cell Tumour			1	1
Endometrioid				
Others			1	1
Total				143

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Table 4: Distribution of Sex Cord Stromal Tumours

Name of tumour	Benign	Borderline	Malignant	Total
Pure Stromal Tumour	2 (Fibroma)	-	-	2
Pure Sex-cord tumour	-	-	2 (Granulosa cell tumour)	2
Sex-cord stromal tumor	-	-	1(Malignant sex-cord stromal tumor)	1
Total	2	-	3	5

Table 5: Distribution of Germ Cell Tumours

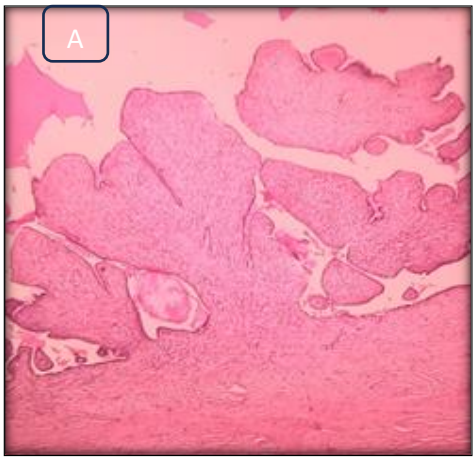
Name of tumour	Number
Mature Teratoma	37
Immature Teratoma	1
Dysgerminoma	3
Yolk sac tumour	-
Embryonal carcinoma	-
Mixed Germ cell Tumour	2
Total	43

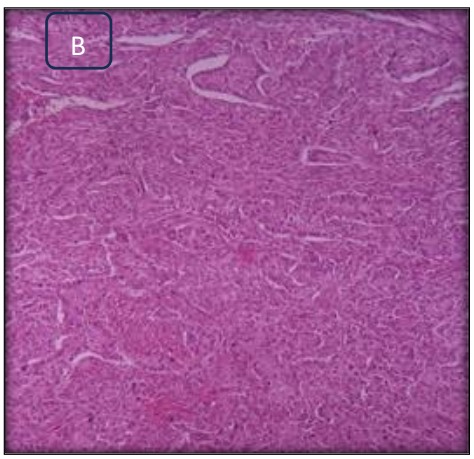
Table 6: Distribution of Bilateral Tumours

Right	Left
Benign Serous Cystadenoma	Benign Serous Cystadenoma
One side-Serous cystadenoma with Brenner tumour	Mature Cystic Teratoma
Mature Cystic Teratoma	Mature Cystic Teratoma
Mucinous Tumour	Benign Brenner Tumour
Papillary Serous Cystadenocarcinoma	Papillary Serous Cystadenocarcinoma

DISCUSSION

In our study, ovarian tumours constituted 22% of the tumours in the female genital tract. Most cases (34.5%) were observed in the third decade of life. This is in contrast with the studies by Sampurna et al. [9] and Thakkar et al.,[10] where the majority of the cases were in the fourth to fifth decade of life, but our study was in accordance with the study by Batool et al.,[11] where most of the women were in the age range of 21-30 years. There were 175 cases (91.6%) of benign tumours, one case (0.5%) of borderline tumours, and 15 cases (7.9%) of malignant tumours. Gupta et al. and Maheshwari et al. also showed an increased prevalence of benign ovarian tumours compared to malignant tumours, where benign tumours constituted 71.9% in each study, borderline tumours constituted 4.4% and 4.1%, and malignant tumours constituted 23.7% and 22.9% of tumours, respectively.[12-16] There were 143 cases (75%) of surface epithelial tumours, five cases (3%) of sex cord stromal tumours, and 43 cases (22%) of germ cell tumours. Of the 143 cases of surface epithelial tumours, six cases are malignant. This shows that 95.8 percent of surface epithelial tumours are benign. The most common benign tumour is serous cystadenoma, and similar results were reported by Yasmin et al.,[17] and Pachori et al.,[18] One case (0.5%) of endometrioid carcinoma in this study was lower than that reported by Ahmad et al.,[19] and Zaman et al.,[20] who reported endometrioid tumours in 12.03% and 3.87% of patients in their study respectively. There were five cases of sex cord stromal tumours which constituted 3 % of ovarian tumours. The incidence of sex cord stromal tumours in our study was close to that reported by Jha and Karki,[21] (3% cases) and Bodal et al.,[22] (3.33% cases). Of the five-sex cord-stromal tumours, two were benign, and three were malignant. Of the 43 cases of germ cell tumours, there were 37 cases of mature cystic teratomas, 3 were dysgerminomas, 2 were mixed germ cell tumours and one was a mature cystic teratoma with an invasive squamous cell carcinoma component. The results of germ cell tumours in the present study (22 %) were close to those reported by Garg et al. (18.8%).[23]





ISSN (O): 2687-5365; ISSN (P): 2753-6556

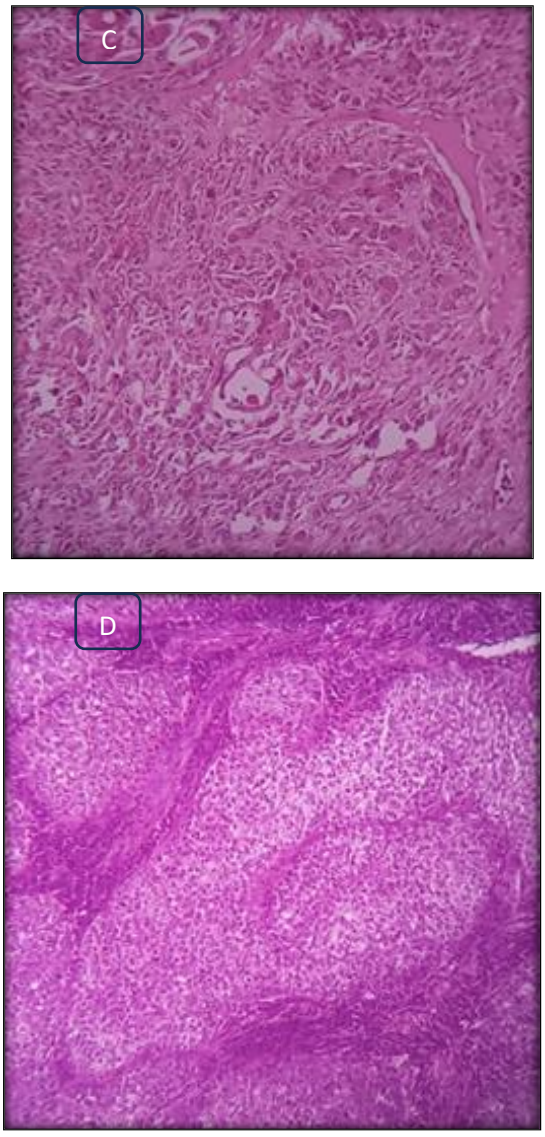


Figure 2. (A). Serous papillary cystadenofibroma (B and C). Malignant sex cord-stromal tumours (D). Dysgerminoma

CONCLUSION

The study concluded that most ovarian tumours are benign, followed by malignant and borderline tumours. Surface epithelial tumours were the most common histopathological pattern of ovarian tumours, followed by germ cell tumours, and then sex cord stromal tumours. Among the subtypes of ovarian tumours, serous cystadenoma is the most common, followed by mucinous cystadenoma and benign cystic teratoma. Despite the limitation, such as the relatively small sample size, this study represents the distribution of histopathological patterns of ovarian tumours in our population. The classification of ovarian tumours according to the WHO 2020 classification into various categories helps to determine the clinical presentation and prevalence of various histopathological patterns of ovarian tumours in our population.

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