

Study of frequency and histopathological pattern of soft tissue tumours in tertiary care centre of Gandhinagar, Gujarat

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Abstract

Background: Ovaries are complex intra-pelvic organs of the female reproductive system. Ovarian cancer accounts for 3% of all cancers in females and is the fifth most common cause of cancer death in women. Early menarche, late menopause, nulliparity and high socioeconomic status are associated with an increased risk for ovarian neoplasms. Histopathological diagnosis remains the mainstay to differentiate neoplastic lesions from non-neoplastic lesions. **Aims and Objectives:** This study aims to analyze the view of ovarian tumors with respect to clinical presentation, gross and microscopic characteristics and also to study the frequency and histopathological patterns of ovarian tumours. **Materials and Methods:** This study comprised of 100 cases of ovarian tumours received in the Department of Pathology, GMERS Medical College, Gandhinagar were analysed. Their gross features, microscopic findings were analysed in detail. Ovarian tumours were divided into benign and malignant categories and their further sub typing were done according to WHO Classification. **Results:** Out of total 100 cases, 76 were benign and 24 were malignant. Out of 100 cases, 62% were between 21-40 years of age followed by 28% were between 41-60 years of age. Most common presenting symptom was pain in abdomen followed by lump in abdomen and heavy menstruation. Out of total 100 cases, 70% were surface epithelial tumours, 24% were germ cell tumours and 6% were sex cord stromal tumours. **Conclusion:** To conclude we recommend microscopic histopathological examination of every ovarian mass in order to assess the importance of pathological grading and staging and they must be classified correctly so that the patient can be provided with appropriate treatment and prognosis.

Keywords: Germ Cell Tumour, Histopathology, Ovarian Tumours, Sex Cord Stromal Tumour, Surface Epithelial Tumour

Introduction

Ovaries are complex intra-pelvic organs of the female reproductive system and are a common site for both benign and malignant neoplasms in all age groups right from intrauterine period to post menopausal age group [1]. The ovary appears remarkably resistant to any form of disease except tumors [2]. The burden of ovarian tumors is next to cervical and uterine cancers in Indian females. Ovarian cancer accounts for 3% of all cancers in females and is the fifth most common cause of cancer death in women [3]. Ovarian cancers represent about 30% of all cancers of the female genital tract [4].

Indian cancer registry data project ovary as an important site of cancer comprising upto 8.7% of cancers in different parts of the country [5].

However, globally, ovarian cancer is the sixth most common cancer in women and the seventh most common cause of cancer death [6]. Ovary is the second most common site for female cancers next only to breast and is associated with highest mortality rate [7]. The rate of ovarian cancer increases with age. Early menarche and late menopause are significant risk factors. Surprisingly, high socioeconomic status is associated with an increased ovarian cancer risk and lower fertility [6]. Nulliparity, family history of cancer and genetic mutations are some of the risk factors associated with the development of ovarian neoplasms although not much is clear about the risk factors involved in these neoplasms as compared to other genital tumours [8,9]. Imaging modalities like USG, CT Scan and MRI can be misleading sometimes and cytology has also its own limitations and challenges.

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Hence, histo-pathological diagnosis remains the mainstay in management and achieving an optimum treatment response [10].

There are four major types of ovarian tissue, all of which can give rise to a variety of neoplasms, often combined: [11].

1. Surface, coelomic, or germinal epithelium
2. Germ cells
3. Sex cords
4. Ovarian stroma, specialized and nonspecific.

The WHO classification system of ovarian malignancies expands every year as newer entities are added each year. The classification of surface epithelial ovarian tumors is based on the following parameters: [11,12].

1. Cell type: serous, mucinous, endometrioid, etc.
2. Pattern of growth: cystic, solid, surface
3. Amount of fibrous stroma
4. Atypia, invasiveness and based on the biologic behavior: benign, borderline, and malignant.

Ovarian epithelial tumours can be benign, borderline or malignant. Benign tumours can be completely cystic (cystadenomas), can have fibrous and cystic areas (cystadenofibromas) or can be predominantly fibrous (adenofibromas). The borderline and malignant tumours that have cystic component are called cystadenocarcinomas [13]. Distinction between non-neoplastic lesion and neoplastic lesion is necessary since proper treatment depends on the histologic abnormality. Different subtypes of ovarian tumors differ with respect to risk factors, precursor lesions, pattern of spread and natural history and response to treatment. Cumulatively, they are different diseases which have a common manifestation of ovarian mass. With progress toward subtype-specific treatment of ovarian carcinoma, accurate, reproducible histopathological diagnosis of these subtypes by pathologists is increasingly important [14].

Identification of various histologic patterns is important in the diagnosis and prognosis. The invasive epithelial ovarian cancers show a peak incidence between 5th to 6th decades. In the postmenopausal women, about 30% of ovarian tumors are malignant [15].

One of the most important clinical features is the age of the patient. The sex cord stromal tumors are almost always confined to single ovary and many metastatic tumours are bilateral. Most benign tumours of epithelial category are cystic. The presence of solid and papillary projections are important clues to likely malignancy [16].

Original Research Article

Aims and Objectives

This study aims to analyze the view of ovarian tumors with respect to clinical presentation, gross and microscopic characteristics and also to study the frequency and histopathological patterns of ovarian tumours.

Materials and Methods

Study Design: The present study was carried out at histopathology section of pathology department of GMERS Medical College and General Hospital, Gandhinagar, a tertiary care centre in Gandhinagar district of Gujarat state, India during the period of April 2014 to March 2018.

Type of study: Retrospective

Data collection procedure: In present study, we analysed all 100 cases which received for histopathology examination under the diagnosis of ovarian tumours from gynecology and surgical department.

Inclusion criteria: The specimens like Ovarian Cystectomy, Total Abdominal Hysterectomy with Bilateral salpingo oophorectomy, Salpingo oophorectomy, Oophorectomy specimens were included in this study.

Exclusion criteria: All the cervical tumors, uterine tumors and any known already diagnosed tumours were excluded from the study.

All relevant clinical and radiological details were collected from patients. Each formalin fixed specimens received surgical specimen in Histopathology Section were examined grossly for its size, shape, weight, consistency and appearance.

Tissue cut surface was also examined for the presence of hemorrhage, necrosis and cystic spaces etc. Presence or absence of any gross involvement of adjacent structure along with depth of the tumor was also noted.

All these specimens were dissected by grossing followed by fixation, dehydration, clearing and impregnation in a automatic tissue processor.

Paraffin blocks were made and sections were cut at 3 to 5 micron thickness and haematoxylin and eosin stain was done. The findings were noted and interpreted according to the WHO classification- 2014 fourth edition [17].

Results

Table-1: Distribution of cases as per chief complaints

Chief Complaint	Benign	Malignant	Total
Asymptomatic	03	01	04
Pain in Abdomen	44	10	54
Lump in Abdomen	19	07	26
Heavy Menstruation	06	02	08
Others	04	04	08
Total	76	24	100

Out of total 100 cases, 76 were benign and 24 were malignant. Most common presenting symptom was pain in abdomen (54 %) cases followed by lump in abdomen (26 %) and heavy menstruation (8 %).

Table-2: Distribution of cases as per types of ovarian tumours

Classes of Tumour	Benign	Malignant	Total
Surface Epithelial Tumour	54	16	70
Germ Cell Tumour	18	06	24
Sex Cord Stromal Tumour	04	02	06
Metastatic Tumour	-	-	-
Total	76	24	100

Out of total 100 cases, 70% were surface epithelial tumours, 24% were germ cell tumours and 6% were sex cord stromal tumours. No any cases of metastatic tumour was identified.

Table-3: Frequency of different classes of tumours in different age groups

Classes of Tumour	< 20	21-40	41-60	>60	Total
Surface Epithelial Tumour	03	45	21	01	70
Germ Cell Tumour	06	14	04	-	24
Sex Cord Stromal Tumour	-	03	03	-	06
Metastatic Tumour	-	-	-	-	-
Total	09	62	28	01	100

Out of 100 cases, 62% were between 21-40 years of age followed by 28% were between 41-60 years of age, 9% were below 20 years and 1% was above 60 years.

Table-4: Frequency of benign tumours in different age groups

Diagnosis	< 20	21-40	41-60	>60	Total
Serous Cystadenoma	02	19	08	03	32 (42.1%)
Mucinous Cystadenoma	02	10	07	02	21 (27.6%)
Mature Cystic Teratoma	01	07	04	01	13 (17.1%)
Serous Cystadenofibroma	-	04	04	-	08 (10.5%)
Fibroma	-	01	01	-	02 (2.6%)
Total	05 (6.6%)	41 (53.9%)	24 (31.6%)	06 (7.9%)	76 (100%)

Out of total 76 benign neoplastic cases, 41 cases (53.9%) were between 21-40 years of age followed by 24 cases (31.6%) were between 41-60 years of age, 6 cases (7.9%) were above 60 years and 5 cases (6.6%) were below 20 years. Out of total 76 benign neoplastic cases, 32 cases (42.1%) were of serous cystadenoma followed by 21 cases (27.6%) were of mucinous cystadenoma, 13 cases (17.1%) were of mature cystic teratoma, 8 cases (10.5%) were of serous cystadenofibroma and 2 cases (2.6%) were of fibroma.

Table-5: Frequency of individual malignant tumours in different age groups

Diagnosis	<20	21-40	41-60	>60	Total
Serous Carcinoma	-	01	03	01	05 (20.8%)
Mucinous Carcinoma	-	01	02	02	05 (20.8%)
Yolk Sac Tumour	-	02	-	-	02 (8.3%)
Dysgerminoma	01	01	-	-	02 (8.3%)
Endometrioid Carcinoma	-	-	02	01	03 (12.5%)
Granulosa Cell Tumour	-	04	-	-	04 (16.7%)
Clear Cell Carcinoma	-	-	02	-	02 (8.3%)
Transitional Cell Carcinoma	-	-	01	-	01 (4.2%)
Total	01 (4.2%)	09 (37.5%)	10 (41.7%)	04 (16.7%)	24 (100%)

Out of total 24 malignant neoplastic cases, 10 cases (41.7%) were between 41-60 years of age followed by 9 cases (37.5%) were between 21-40 years of age, 4 cases (16.7%) were above 60 years and 1 case (4.2%) was below 20 years. Out of total 24 malignant neoplastic cases, 5 cases (20.8%) were of serous carcinoma and mucinous carcinoma each followed by 4 cases (16.7%) were of granulosa cell tumour, 3 cases (12.5%) were of endometrioid carcinoma, 2 cases (8.3%) were of yolk sac tumour, dysgerminoma and clear cell carcinoma each and 1 case (4.2%) was of transitional cell carcinoma.

Discussion

In the present study, 100 ovarian tumours were analyzed, out of which 76 cases (76.0%) cases were benign and 24 cases (24.0%) were malignant. This is in concordance with the study conducted by Abdullah et al and Neethu GV et al where 78.0 % and 70.3% of the ovarian tumours in their study were benign and 22% and 29.7% were malignant respectively [18,19]. While in study of Jha R et al and Ranjana Hawaldar et al benign cases were 84% and 91.5% respectively [20,21].

The most common neoplasm diagnosed in the present study was the surface epithelial tumours which constituted 70%. This was comparable to study done by Neethu CV et al, Ranjana Hawaldar et al and Makwana HH et al where the incidence of the surface epithelial tumours was 74.4%, 69.7% and 65.7%. No borderline tumour was found in our study [19,21,22].

Next most common ovarian neoplasm were the germ cell tumours, which constituted 24%. This was closely comparable with study conducted by Ranjana Hawaldar et al and Makwana HH et al where the incidence of the germ cell tumours was 24.4% and 22.86% respectively [21,22]. The least common ovarian neoplasm diagnosed in our study was sex cord stromal tumours whose incidence was only 6% which was quite similar to study of Neethu CV et al where the incidence was 7.4% [19].

In the present study, serous tumours were found to be more common among the surface epithelial tumours. Studies on ovarian tumours carried out by Neethu CV et al, Nalini G et al and Maheshwari et al have also reported similar results where the serous cystadenoma were the most common [19,23,24].

Among the malignant surface epithelial tumours, high grade serous carcinoma was the most common tumour diagnosed in our study group. This does not correlate with the study conducted by Yasmeen S et al where endometrioid carcinoma was found to be more prevalent [25]. Germ cell tumours (GCT) were the second most common tumours (24%) to be diagnosed in the present study. Incidence of mature cystic teratomas among the benign germ cell tumours was highest. Similar findings were obtained by Ashraf A et al [26].

Among the sex cord stromal tumours that were diagnosed in our study, granulosa cell tumour was the most common. Similar incidences were obtained in other studies like the studies by Makwana HH et al and Ashraf A et al [22,26].

The age range of patient was from 12 to 69 years. Maximum number of benign cases were seen in the age group of 21-40 years followed by 41-60 years age group. Maximum number of malignant cases were seen in the age group of 41-60 years followed by 21-40 years age group. Least number of cases were seen in age less than 20 years and above 60 years of age.

Sheikh S et al in her study found maximum cases in 21-40 years of age group similar to that seen in our study [27]. Peak age for benign tumours were seen in 3rd to 4th decade, which is similar to study done by Dhakal R et al and Sawant A et al [28,29].

In study of Sawant A et al, peak age of malignant tumours also found in patients of 41-60 years of age as seen in our study [29].

Most common clinical presentation was pain abdomen (54%) and abdominopelvic lump (26%) which was similar to study done by Bodhal VK et al. Other clinical presentation were heavy menstruation (8%) and incidental finding (4%) [30].

Conclusion

Ovary is a common site of neoplasia in the female genital tract which constitute a major burden among women presenting to the gynecological OPD and usually present with a variety of clinicomorphological and histological features. However, benign tumours are far more common than their malignant counterparts with surface epithelial tumours being the commonest followed by germ cell tumours, majority presenting in 21-40 years age group.

To conclude we recommend microscopic histopathological examination of every ovarian mass in order to assess the importance of pathological grading and staging and they must be classified correctly so that the patient can be provided with appropriate treatment and prognosis.

What this study adds to existing knowledge: This is important to know the different variety of pattern of ovarian tumours in Gandhinagar district.

Author contribution: First author Dr. Amita Patel has prepared the study design and drafted manuscript in presentable manner for publication. Second and corresponding author Dr. Vandana Patel has collected all data and done study in his own institute.

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