



Original Article

# A study of ovarian tumors at Kathmandu medical college teaching hospital

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## Keywords:

Benign;  
Borderline;  
Malignant tumour;  
Ovary;  
Teratoma

## ABSTRACT

**Background:** Ovarian cysts, which present as neoplastic and non-neoplastic lesions, are the most common gynecological cause of hospital admissions. This study was conducted to know the spectrum of ovarian tumors.

**Materials and Methods:** A cross sectional study was carried out among all the ovarian specimens sent for histopathological examination.

**Results:** Germ cell tumour comprises 53.85% followed by Surface epithelial tumours 45.05% and metastatic tumour 1.1%. Among surface epithelial tumours, 82.9% were benign neoplasm, 4.9% were borderline and 12.2 % were malignant. Among all Germ cell tumours, 45 (91.84%) were Mature cystic teratoma, 2 (4.08%) was Immature cystic teratoma and 2 (4.08%) were Dysgerminoma.

**Conclusion:** Incidence of Surface epithelial tumours and germ cell tumours were found to be almost equal with mild predominance of Germ cell tumour.

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## INTRODUCTION

Ovarian cancer is the most frequent cause of death from gynecological cancer.<sup>1</sup> The incidence of ovarian neoplasm was 16.7% among total gynecological admission and the fourth most frequent cause of death from a cancer in women in Europe and US.<sup>2</sup>

Most of the ovarian lesions are presented with cyst formation which can be of physiological or pathological.<sup>3</sup> Pathological cysts are mainly ovarian tumours which can be benign, borderline or malignant.<sup>3</sup> Benign ovarian cyst may occur at any age but they are mostly seen during reproductive age

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and constitute about 90% of ovarian tumour.<sup>4</sup>

Due to their location, lack of regular screening and lack of specific symptoms, ovarian tumour often go undetected until they attain large size and present at a later age.<sup>5</sup>

The nature of ovarian cystic lesions is difficult to determine by clinical examination and even on surgical exploration. As the management and prognosis mainly depend on the histological type and the grade of the tumor, it is mandatory to find out the origin and the type of tumor by doing thorough histopathological examination.<sup>6,7</sup> In this study, we have analyzed the histopathological types of ovarian tumours with frequency and age distribution.

## MATERIALS AND METHODS

This is a cross sectional study carried out in Department of Pathology, Kathmandu Medical College Teaching Hospital (KMCTH) during the period of eighteen months from January 2016 to June 2017. Ethical clearance was obtained from the IRC in KMCTH. All the histopathologically proven ovarian tumour specimens of ovarian lesion received in Department of Pathology were included in the study. The tissues were processed by routine tissue processing. The paraffin blocks were made and sections stained with Haematoxylin and Eosin. Histopathological diagnosis was correlated with age of the patient and ovary involvement (unilateral or bilateral). Statistical analysis was performed using Microsoft Excel.

## RESULTS

A total of 91 cases of ovarian lesions were studied. Among these, 41 cases were surface epithelial tumours, 49 cases were germ cell tumour and 1 case was metastatic carcinoma (Table 1).

Various tumors are seen in various age groups which is shown in table 2. Most of the ovarian tumour was found in 21- 30 years age group (41.76%) followed by 41-50 years age group (23.07%). Mature cystic teratoma was seen predominantly in the 21-30 years age-group (n=26; 28.5%).

Among Surface epithelial tumours, 82.9% were benign neoplasm, 4.9% were borderline and 12.2% were malignant neoplasm (Table 1). Serous cystadenoma was found to be the commonest among benign surface epithelial tumour followed by Mucinous cystadenoma. Out of 5 primary surface epithelial malignant cases, serous cystadenocarcinoma was the commonest.

Among all Germ cell tumours (Table 3), Mature cystic teratoma was found to be the commonest comprising 91.84%, followed by Immature cystic teratoma 4.08% and Dysgerminoma 4.08%.

Among 91 cases, 92.31% were unilateral either right or left and 7.69% were bilateral. Right ovary was commonly involved among Surface epithelial tumour in comparison to left ovary (Table 3) Regarding Germ cell tumour, both right and left ovaries were found to be almost equally involved. Out of 7 bilateral cases, 57.14% were Mature cystic teratoma which is 4.4 % of all ovarian neoplasm (Table 4).

## DISCUSSION

Cystic lesions of the ovary are one of the commonest specimens that is received in the Pathology lab for the histopathological examination. Due to the similar clinical presentation of both non-neoplastic and neoplastic lesions of ovary, histopathological examination remains important for the proper management of tumour.<sup>8</sup>

The incidence of benign tumour was found to be 86.8% and malignant tumour was 11.0% with borderline tumour comprising 2.2%. The findings were similar in a study done in Nepal by Jha R et al<sup>9</sup> and Pudasaini S et al.<sup>3</sup> In a study done by Pudasaini S et al.<sup>3</sup>, benign tumour was found to be 87.3% and malignant was 12.7 %. Similarly, 83.9% was benign and 16.1% was malignant in a study of Jha R et al.<sup>9</sup> The incidence was found to be less in a study done by Ahmed Z et al<sup>10</sup> where benign tumour was found to be only 59.2 % and malignancy was high comprising 40.8 percent.

In our study, Germ cell tumour was found to be the commonest comprising 53.85percent. The findings were similar in the other studies.<sup>9-12</sup> However it was found to be the second most common in other studies.<sup>3,9</sup> Mature cystic tumour was the commonest tumour in our study comprising 49.45 % of all ovarian primary tumours and 91.84% of all Germ cell tumour. The findings were similar with the findings of other studies<sup>3,9</sup> however it was found to be the third commonest tumour in a study done by Prabhakar BR et al.<sup>13</sup>

In the western world, 95% of ovarian Germ cell tumours were mature cystic tumour and only 3% of ovarian tumours are immature.<sup>14,15</sup> Here in this study 4.08% of ovarian Germ cell tumour were found to be immature. Malignant germ cell tumours are the most common ovarian cancers among children and adolescent.<sup>15</sup> Immature teratoma form 10-20% of ovarian cancers occurring in 1st two decade of life.<sup>14</sup> In this study, 7 ovarian tumours were seen in 1<sup>st</sup> two decade, out of which 3 were germ cell tumour comprising one Immature teratoma (14.3%) .

The second most common tumour was found to be Surface epithelial tumour comprising 45.55% of the entire primary ovarian tumour whereas in a study done by Jha R et al<sup>9</sup> it was 52.2%. Similarly it was found to be 70.9% and 63.5% in studies done by Pilli GS et al.<sup>16</sup> and Ahmad Z et al<sup>10</sup> respectively. Malignant Surface epithelial tumours constituted 69.2% of all ovarian malignancies<sup>9</sup> and in

**Table 1: Frequency of Benign, borderline and malignant ovarian tumours**

Class type of tumour	Benign	Borderline	Malignant	Total
Surface epithelial	34 (43.04%)	2	5 (50.0%)	41 (45.05%)
Germ cell	45 (56.96%)		4 (40.0%)	49 (53.85%)
Metastatic			1 (10.0%)	01 (1.1%)
<b>Total</b>	<b>79 (86.8 %)</b>	<b>2 (2.2%)</b>	<b>10 (11.0 %)</b>	<b>91 (100%)</b>

**Table 2: Age wise distribution of ovarian tumours (n= 91)**

Histopathological Diagnosis	Age group (years)						Total
	10-20	21-30	31-40	41-50	51-60	>60	
<i>Mature cystic teratoma</i>	2	26	8	8		1	45(49.45%)
<i>Serous cystadenoma</i>	2	4	3	8	1	3	21(23.077%)
<i>Mucinous cystadenoma</i>	2	6		2	1	2	13(14.29%)
<i>Serous cystadenocarcinoma</i>			3				3(3.3%)
<i>Immature cystic teratoma</i>	1		1				2(2.2%)
<i>Dysgerminoma</i>		2					2(2.2%)
<i>Serous borderline</i>				1			1 (1.099%)
<i>Mucinous borderline</i>				1			1(1.099%)
<i>Mucinous cysadenocarcinoma</i>			1				1(1.099%)
<i>Endometroid carcinoma</i>				1			1(1.099%)
<i>Krukenberg tumour</i>					1		1(1.099%)
<b>Total</b>	<b>7(7.69%)</b>	<b>38 (41.76%)</b>	<b>16(17.58%)</b>	<b>21(23.07%)</b>	<b>3(3.3%)</b>	<b>6(6.6%)</b>	<b>91(100%)</b>

**Table 3: Frequency of epithelial tumours (n= 42)**

Histopathological Diagnosis		Percentage	Left ovary	Right Ovary	Bilateral
<b>Benign</b>	Serous cystadenoma	21(50.0%)	4	16	1
	Mucinous cystadenoma	13(31.9%)	6	7	
	<b>Total</b>	<b>34(80.95%)</b>	<b>10(23.81%)</b>	<b>23(54.76%)</b>	<b>1(2.38%)</b>
<b>Borderline</b>	Serous borderline	1(2.38%)		1	
	Mucinous borderline	1(2.38%)		1	
	<b>Total</b>	<b>2 (4.76%)</b>		<b>2(4.76%)</b>	
<b>Malignant</b>	Serous cystadenocarcinoma	3 (7.14%)	2		1
	Mucinous cystadenocarcinoma	1(2.38%)			1
	Endometroid carcinoma	1(2.38%)		1	
<b>Metastatic</b>	Krukenburg tumour	1(2.38%)		1	
<b>Total</b>		<b>42(100%)</b>	<b>12(28.57%)</b>	<b>27 (64.29%)</b>	<b>3(7.14%)</b>

our study it was found to be 55.55%. Among all ovarian tumours, Serous cystadenoma comprises 23.08% followed by Mucinous cystadenoma 14.3%. In other studies, it constitutes 35.4%, 32.7% and 42.9%.<sup>9,13,16</sup> Mucinous tumour constitutes 17% of all ovarian tumours in this study which was 16.8%, 25.0% and 25.5% in other studies.<sup>9,13,16</sup> Out of all serous tumours, 84.0 % were benign & 12.0% were malignant which was 78.9% and 21.% respectively in a study done by Jha R et al<sup>9</sup>. Similarly, out of all mucinous tumours, 86.67% were benign and 6.67% were malignant which was 77.8 % and 22.2% in a study done by Jha R et al.<sup>9</sup> Serous borderline was 4.0% among all serous tumour and 6.67 % was Mucinous borderline among all mucinous tumour.

Ovarian tumour was found to be more common among the age group of 21-30 years. A total of 41.76% tumours were found in this group followed by 41-50 years age group comprising 23.07 percent. The finding were similar in a study done by Kayastha S et al<sup>2</sup> and Pudasaini S et al.<sup>3</sup> However in a study done Maharjan S et al<sup>17</sup>, it was found to be most common in the age group of 31-40 years comprising 41.0% followed by 21-30 years age group..

The primary ovarian tumors were mostly unilateral. In this study, 92.3% were unilateral either right or left and 7.69% were bilateral. Right ovary was commonly involved among surface epithelial tumour 64.28% in comparison to left ovary 28.57 percent. Regarding germ cell tumour, both

**Table 4: Frequency of germ cell tumour (n= 49)**

Histopathological Diagnosis	Percentage	Left ovary	Right Ovary	Bilateral
Teratoma	Mature cystic teratoma	19	22	4
	Immature cystic teratoma	2		
Dysgerminoma	2(4.08%)	1	1	
<b>Total</b>	<b>49(100%)</b>	<b>22(45.0%)</b>	<b>23(46.9%)</b>	<b>4(8.1%)</b>

right and left ovaries were found to equally involved. Out of 7.7% bilateral cases, 42.86% were epithelial origin and 57.14% were germ cell origin. The incidence of bilaterality was found to be higher in a study done by Kanthikar SN et al<sup>18</sup> where bilaterality was found in 21.82% but Madan A et al<sup>19</sup> and Verma K et al<sup>20</sup> observed low incidence of bilaterality in 11 % and 11.91% respectively. Regarding bilateral presentation of mature cystic teratoma, the figures are similar with the findings of a study done by Maharjan S et al.<sup>17</sup>

## CONSLUSION

Ovarian cystic lesions present from prepubertal to the postmenopausal age. The ovarian cystic lesion behaves in diverse ways. As there is lack of specific symptoms and signs, which suggest malignant nature, these cysts require excision for histopathological examination based on which proper patient management can be done.

**Conflict of interest:** None

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