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A clinical assessment of ovarian tumours in the females admitted to DMCH Bihar

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Abstract
Owing to the development and improvement of growing number of conservative surgeries like laparoscopic surgery, the ultimate diagnosis of an ovarian mass is considered to be an important mission in gynecologic practice. The degree of suspicion for malignancy in a given mass is based largely on imaging appearance. Suspicious ovarian masses should be evaluated preoperatively to know their nature and behavior, which in turn persuade the choice of type of surgery. Evaluation of the suspicious ovarian mass should include clinical evaluation and imaging techniques
The study was planned in Department of Pathology in Darbhanga Medical College and Hospital, Darbhanga, Bihar from Jun 2017 to Dec 2017. Total 50 females diagnosed with the ovarian tumours were enrolled in the present study.
The study clearly shows surface epithelial tumours were the most common of all ovarian tumours. Benign Ovarian Tumors are more common than malignant ovarian tumors in the present study, and Benign Surface Epithelial Tumors are the most common type of benign ovarian tumors followed by Benign Germ Cell Tumors. The relative frequency of incidence of ovarian tumours is known to be different for western and Asian countries; we have additionally observed intra-regional variations in incidence rates within Asia. It is, therefore, suggested that further efforts must be made to identify region-specific risk factors for ovarian oncogenesis.

Keywords: ovary tumors, benign, surface epithelial tumors

Introduction
Ovarian cancer is a cancer that forms in or on an ovary. It results in abnormal cells that have the ability to invade or spread to other parts of the body. When this process begins, there may be no or only vague symptoms. Symptoms become more noticeable as the cancer progresses. These symptoms may include bloating, pelvic pain, abdominal swelling, and loss of appetite, among others. Common areas to which the cancer may spread include the lining of the abdomen, lymph nodes, lungs, and liver [1].
The risk of ovarian cancer increases in women who have ovulated more over their lifetime. This includes those who have never had children, those who begin ovulation at a younger age and those who reach menopause at an older age. Other risk factors include hormone therapy after menopause, fertility medication, and obesity. Factors that decrease risk include hormonal birth control, tubal ligation, and breast feeding. About 10% of cases are related to inherited genetic risk; women with mutations in the genes BRCA1 or BRCA2 have about a 50% chance of developing the disease. The most common type of ovarian cancer, comprising more than 95% of cases, is ovarian carcinoma. There are five main subtypes of ovarian carcinoma, of which high-grade serous carcinoma is the most common. These tumors are believed to start in the cells covering the ovaries, though some may form at the Fallopian tubes. Less common types of ovarian cancer include germ cell tumors and sex cord stromal tumors. A diagnosis of ovarian cancer is confirmed through a biopsy of tissue, usually removed during surgery [2].
Screening is not recommended in women who are at average risk, as evidence does not support a reduction in death and the high rate of false positive tests may lead to unneeded surgery, which is accompanied by its own risks. Those at very high risk may have their ovaries removed as a preventive measure. If caught and treated in an early stage, ovarian cancer is often curable. Treatment usually includes some combination of surgery, radiation therapy, and chemotherapy. Outcomes depend on the extent of the disease, the subtype of cancer present, and other medical conditions. The overall five-year survival rate in the United States is 45% [6]. Outcomes are worse in the developing world [3].
Early signs and symptoms of ovarian cancer may be absent or subtle. In most cases, symptoms exist for several months before being recognized and diagnosed. Symptoms can be misdiagnosed as irritable bowel syndrome. The early stages of ovarian cancer tend to be painless. Symptoms can vary based on the subtype. Low malignant potential (LMP) tumors, also known as borderline tumors, do not cause an increase in CA125 levels and are not identifiable with an ultrasound. The typical symptoms of an LMP tumor can include abdominal distension or pelvic pain. Particularly large masses tend to be benign or borderline [4].
The most typical symptoms of ovarian cancer include bloating, abdominal or pelvic pain or discomfort, back pain, irregular menstruation or postmenopausal vaginal bleeding, pain or bleeding after or during sexual intercourse, loss of appetite, fatigue, diarrhoea, indigestion, heartburn, constipation, nausea, feeling full, and possibly urinary

symptoms (including frequent urination and urgent urination) [5].

Ovarian cancer forms when errors in normal ovarian cell growth occur. Usually, when cells grow old or get damaged, they die, and new cells take their place. Cancer starts when new cells form unneeded and old or damaged cells do not die as they should. The build-up of extra cells often forms a mass of tissue called a growth or tumor. These abnormal cancer cells have many genetic abnormalities that cause them to grow excessively. When an ovary releases an egg, the egg follicle bursts open and becomes the corpus luteum. This structure needs to be repaired by dividing cells in the ovary. Continuous ovulation for a long time means more repair of the ovary by dividing cells, which can acquire mutations in each division [4].

Cancerous ovarian tumors start from three common cell types:

- Surface Epithelium - cells covering the outer lining of the ovaries
- Germ Cells - cells that are destined to form eggs
- Stromal Cells - Cells that release hormones and connect the different structures of the ovaries

Epithelial Tumors: Epithelial ovarian tumors develop from the cells that cover the outer surface of the ovary. Most epithelial ovarian tumors are benign (noncancerous). There are several types of benign epithelial tumors, including serous adenomas, mucinous adenomas, and Brenner tumors. Cancerous epithelial tumors are carcinomas - meaning they begin in the tissue that lines the ovaries. These are the most common and most dangerous of all types of ovarian cancers, accounting for 85 to 90 percent of all cancers of the ovaries. Unfortunately, almost 70 percent of women with the common epithelial ovarian cancer are not diagnosed until the disease is advanced in stage. There are some ovarian epithelial tumors whose appearance under the microscope does not clearly identify them as cancerous. These are called borderline tumors or tumors of low malignant potential (LMP tumors).

Germ Cell Tumors: Ovarian germ cell tumors develop from the cells that produce the ova or eggs. Most germ cell tumors are benign (non-cancerous), although some are cancerous and may be life-threatening. The most common germ cell malignancies are maturing teratomas, dysgerminomas, and endodermal sinus tumors. Germ cell malignancies occur most often in teenagers and women in their twenties. Today, 90 percent of patients with ovarian germ cell malignancies can be cured and their fertility preserved.

Stromal Tumors: Ovarian stromal tumors are a rare class of tumors that develop from connective tissue cells that hold the ovary together and those that produce the female hormones, estrogen and progesterone. The most common types are granulosa-theca tumors and Sertoli-Leydig cell tumors. These tumors are quite rare and are usually considered low-grade cancers, with approximately 70 percent presenting as Stage I disease (cancer is limited to one or both ovaries). Granulosa cell tumors (GCTs) are considered stromal tumors and include those composed of granulosa cells, theca cells, and fibroblasts. GCTs account for approximately 2 percent of all ovarian tumors [6].

Owing to the development and improvement of growing number of conservative surgeries like laparoscopic surgery, the ultimate diagnosis of an ovarian mass is considered to be an important mission in gynecologic practice. The degree of suspicion for malignancy in a given mass is based largely on imaging appearance. Suspicious ovarian masses should be evaluated preoperatively to know their nature and behavior, which in turn persuade the choice of type of surgery. Evaluation of the suspicious ovarian mass should include clinical evaluation and imaging techniques [7].

Methodology

The study was planned in Department of Pathology in Darbhanga Medical College and Hospital, Darbhanga, Bihar from Jun 2017 to Dec 2017. Total 50 females diagnosed with the ovarian tumours were enrolled in the present study.

All the specimens were received from the oophorectomy/salpingectomy (unilateral/bilateral) / panhysterectomy surgical procedures in the adequate formalin fixed state. The gross findings were noted, and relevant bits were taken for tissue processing. The tissues were routinely processed with paraffin embedding, followed by micro section and stained by hematoxylin and eosin.

All the patients were informed consents. Approval of the institutional ethical committee was taken prior to conduct of the study. The aim and the objective of the present study was conveyed to the patients.

Following was the inclusion and exclusion criteria for the present study:

Inclusion Criteria

Patients presented with suspicious ovarian masses detected clinically or by ultrasound examination. Patients with ovarian masses and scheduled for surgery.

Exclusion Criteria

All non-neoplastic or tumour-like lesions of the ovary and patients with ovarian masses managed conservatively were excluded.

Results & Discussion

The data from the 50 females were collected and presented as below. The data generated in the present findings were compared with the already reported literature.

Ovarian tumors are one of major health problems confronting the gynaecological practitioner in OPD. Ovarian tumor may be either totally asymptomatic or may be found on routine ultrasound examination. Sometimes symptoms may be vague that patient actually present with an acute emergency like torsion of cyst. But the worst is late presentation of ovarian tumor. It is generally impossible to diagnose the nature of neoplasm preoperatively just by doing clinical examination. Hence, one has to depend upon pathological findings for classification and further management of ovarian neoplasm. As our college is situated in a region where most of our patients have low education level and low socioeconomic status, so in many cases presentation of ovarian tumor in often late.

The ovarian neoplasm is classified into benign, borderline and malignant and its type is based on the four major tissue structures; Surface epithelium, Germ cell, Sex-cords, and Stromal components. In this study, the most common clinical presentation of benign ovarian tumor is mass per abdomen and pain, and the majority of them presented as unilateral lesions.

Table 1: Age group & Type of Tumours

Age Group	No. of Cases = 50		
	Benign	Borderline	Malignant
21 - 30 years	2	1	1
31 - 40 years	21	0	2
41 -50 years	8	1	2
51 - 60 years	2	1	4
61 – 70 years	2	0	3
Total	35	3	12

Table 2: Types of different ovarian tumours

Types of different ovarian tumours	No. of Cases
A) Surface Epithelial Tumours	
1. Benign:	
a. Serous cystadenoma	17
b. Mucinous cystadenoma.	14
c. Benign Brenner tumour.	1
2. Borderline:	
a. Serous borderline.	0
b. Mucinous borderline	1
3. Malignant:	
a. Serous cystadenocarcinoma.	4
b. Mucinous Cystadenocarcinoma	2
B) Germ Cell Tumours:	
▪ Benign mature cystic teratoma.	
▪ Malignant:	4
1. Squamous cell carcinoma in teratoma.	1
2. Immature Teratoma	1
C) Sex Cord Stromal Tumours:	
1. Granulosa cell tumour	1
2. Fibrothecoma.	1
3. Scelrosing stromal tumour	0
Malignant:	
1. Fibrosarcoma	0
D) Secondary or Metastatic Tumours:	
1. Uterine endometrioid carcinoma metastasis to ovary	1
E) Others:	
1. Ovarian leiomyoma.	1
2. Endometriotic cysts.	1
Total	50

The majority of the benign ovarian tumors occurred in the third and fourth decade of life. These clinical presentation and age distribution conforms with the previous studies [8].

The studies from African Countries shows Benign Germ Cell Tumors are more common form of benign ovarian tumors and these observations support that Germ Cell Tumors is more common in African women [9-10]. The international studies showed there is an existence of definite racial predisposition to the development of Germ Cell Tumors which is known to occur more frequently in the oriental and Negro populations. It has been suggested that this higher incidence of Germ Cell Tumor in Africans compared to the European, North American and Indian Women is perhaps only a reflection of the comparatively lower incidence of Surface Epithelial Tumors [11-12].

Serous tumor constituted the commonest tumor among surface epithelial tumor and comprised 75% of all epithelial tumors, an observation identical to other authors regarding ovarian neoplasm in India [13-14]. Serous cystadenoma was the most common among the serous tumors in this study, an observational same to Maheshwari V *et al* [15]. In study of Thaniskasalam *et al* [16] in Malaysia, teratomas were commonest benign tumors among Malays and Chinese whereas serous cystadenoma was commonest among Indians. Majority of benign serous tumors occur in 4th to 6th decade although they may occur in patients younger than 20 or older than 80 years [17]. Similar observations have been found in this study also. Among the rest benign epithelial tumors observed were three cases each of papillary cystadenofibroma and mucinous cystadenoma. All the malignant epithelial tumors were seen after 3rd decade and comprised one case each of serous cystadenocarcinoma, endometrial carcinoma and poorly differentiated mucinous cystadenocarcinoma without predilection to any specific tumor.

Ovarian tumour is a silent menace that presents as a tremendous clinical challenge to gynaecologist, medical oncologist and radiotherapists. Emergence of borderline tumours with prognostic difference from the benign and malignant counterparts, has added a wing to research in the field of ovarian tumours. Accurate diagnosis of ovarian tumours can be rendered in almost all of cases by correlating the clinical presentation, radiographic appearance and histomorphological features, which remains the gold standard. Even then, in the modern era by the application of specialised methods like special stains, IHC markers, ultrastructural studies and cytogenetics, there is a vast scope for reaching specific & reliable diagnosis of

difficult dilemmatic cases of ovarian tumours, by which the therapeutic and prognostic implications could be modified.
Alarmingly observations showed an increased incidence of ovarian malignancy in our study, which calls for more research into region-specific risk factors. A more complete understanding of the epidemiologic and genetic determinants of ovarian cancer may lead to the development of better screening and detection methods for this disease.

Conclusion

The study clearly shows surface epithelial tumours were the most common of all ovarian tumours. Benign Ovarian Tumors are more common than malignant ovarian tumors in the present study, and Benign Surface Epithelial Tumors are the most common type of benign ovarian tumors followed by Benign Germ Cell Tumors. The relative frequency of incidence of ovarian tumours is known to be different for western and Asian countries; we have additionally observed intra-regional variations in incidence rates within Asia. It is, therefore, suggested that further efforts must be made to identify region-specific risk factors for ovarian on cogenesis.

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