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To Study Age wise Distribution, Clinical Presentation & Correlation with CA125 level in various types of Ovarian Tumors at SAIMS & PGI, Indore

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Abstract
Ovarian cancer accounts for about 3% of all cancers in women. Ovary is the most important organ, as it is concerned with the reproduction of progeny. Ovary is also unique in the variety of lesions that can arise from it. Ovarian cancer is the ninth most common cancer among women, excluding non-melanoma skin cancers. It ranks fifth in cancer deaths among women, accounting for more deaths than any other cancer of the female reproductive system[1]. A woman's risk of having an ovarian cancer at birth is 1-1.5% and that of dying from it is 0.5%.[2]
In the present study benign tumors were more common in the 21-40 yrs age group forming 60.66% and malignant tumors were more common after the 40 yrs of age forming 76.47%, similar observations reported by others.[6,8,9] Age seems to be no bar to the development of an ovarian neoplasm. Age range in the present study was wide i.e. 06-75 years. Almost similar age range was reported by Vora & Bhargava (1969)[8] and Swamy & Satyanarayana (2010)[6]. In a study by Prabhakar & Maingi (1989)[15] and Gupta et al (1986)[10] age range was 3 ½ to 75 yrs and 3 to 70 yrs.
Keywords: *Age Distribution, Clinical, Ovarian Tumors & Histopathological.*

Introduction

Ovarian cancer is the ninth most common cancer among women, excluding non-melanoma skin cancers. It ranks fifth in cancer deaths among women, accounting for more deaths than any other cancer of the female reproductive system[1]. A woman's risk of having an ovarian cancer at birth is 1-1.5% and that of dying from it is 0.5%.[2]
Of all the gynecological cancers, ovarian tumors represent the greatest challenge to clinicians, because it is very difficult to diagnose it in early stage due to its nonspecific symptoms & even asymptomatic nature in many cases.[2] On the other hand, ovarian tumors at advanced stage are easy to diagnose but associated with poor prognosis, despite advances in surgery, chemotherapy and more recently, targeted therapy. Ovarian tumors are also a constant source of confusion to the pathologists, because of the wide spectrum of clinical & morphological features. Further, certain

non neoplastic lesions of ovary frequently form a pelvic mass and often associated with abnormal hormonal manifestations, thus potentially mimicking ovarian neoplasm.[2]

Ovarian tumors are a heterogeneous group of neoplasms of epithelial, stromal and germ cell origin. Even in single class of tumor, there exists inherent heterogeneity with biological behavior ranging from benign to highly aggressive malignant tumor. Not only primary, the ovary is the favorite site to get metastatic deposits from other abdominal cancers as well.[3] Most ovarian tumors cannot be confidently distinguished from one another on the basis of their clinical or gross characteristics alone, although it provides important diagnostic clues in formulating a differential diagnosis. One of the most important clinical features is the age of the patient.[4] They can arise at any age but there are differences in incidence of specific histological types during various age groups. Germ cell tumors are common in childhood and in young age while surface epithelial tumors are common in adults. Malignant tumors are more common in older patients than younger patients.[5] The laterality also provides clue to their nature, for example, tumors in the sex cord stromal category are almost always confined to single ovary while most of the metastatic tumors are bilateral. Gross features also help in differential diagnosis and represent the integral behavior of tumor, like most benign tumors of epithelial category are cystic, on the other hand the finding of solid element and papillary projections make malignancy more likely. Nevertheless, accurate diagnosis primarily depends on the wide range of microscopic features they exhibit.[4]

Aims and Objectives

To Study Age wise Distribution, Clinical Presentation & Correlation with CA125 level in various types of Ovarian Tumors at SAIMS & PGI, Indore

Study Design: Observational Study.

Material and Methods

The present study of ovarian tumors was carried out at Sri Aurobindo Medical College & PG Institute; Indore (M.P.). Study included prospective cases over period of 2 years.

History, clinical features and investigation profile were collected from the patients and from the requisition form filled by clinicians.

Observations & Results

The material under the present study for the period from October 2013 to September 2015 (only prospective) contained 203 cases of ovarian tumors. Out of 203 cases, 150 (73.89%) were benign, 51(25.1%) were malignant tumors and 2 (0.98%) cases were borderline tumors.

1. Clinical presentation

- **Age**

Highest number of cases (59 cases, 29.06%) found in the fourth decade followed by 5th decade (47 cases, 23.15%). Benign tumors were more common in the third and fourth decades of life, the mean age for benign tumor was 38.06 years, and the mean age for borderline tumors was 48.00 yrs. Malignant tumors were more common in age (>40 yrs), mean age was 48.64 yrs (Table.1) (Fig.1).

Table 1: Distribution of ovarian tumors according to age

	Age in Years						
	0-10	**11-20**	**21-30**	**31-40**	**41-50**	**51-60**	**>60**
Benign	2	5	41	50	27	13	12
Borderline	0	0	1	0	0	0	1
Malignant	0	2	1	9	20	12	7
Total	2	7	43	59	47	25	20

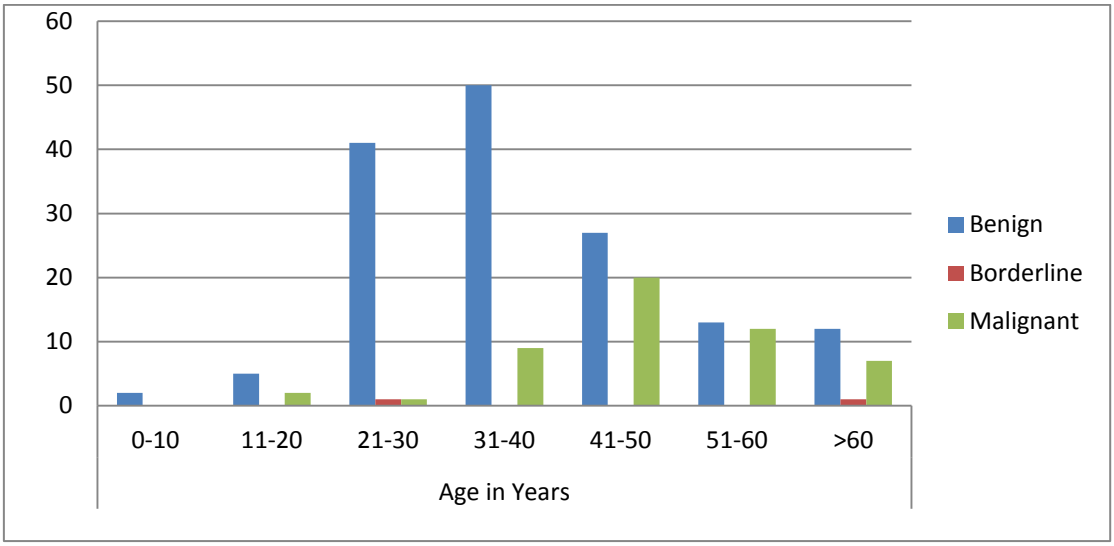

Fig.1: Distribution of ovarian tumors according to age

In the first two decades of life most common type of tumor was germ cell tumors constituting 44.44% of all tumors in first two decades. Single case of YST was observed in 2nd decade. Most of the cases of mature cystic teratoma were seen in 21 to 40 yrs of age group (Table.2)

Table 2: Distribution of ovarian tumors according to age

Tumors	Age in Years							
	0-10	**11-20**	**21-30**	**31-40**	**41-50**	**51-60**	**>60**	**Total**
Benign serous tumor	0	0	8	26	11	5	5	55
SBOT	0	0	1	0	0	0	0	1
Malignant serous tumor	0	0	0	2	9	6	6	23
Mucinous cystadenoma	0	2	10	11	11	6	5	45
MBOT	0	0	0	0	0	0	1	1
Malignant mucinous tumor	0	1	0	1	8	2	1	13
Endometrioid carcinoma	0	0	0	1	0	0	0	1
Clear cell carcinoma	0	0	0	0	0	2	0	2
Dysgerminoma	0	0	0	1	0	0	0	1
Mature cystic teratoma	2	2	20	12	4	0	1	41
Mix-Sex Cord Stromal Tumor	0	0	0	0	0	1	0	1
YST	0	1	0	0	0	0	0	1
Mixed germ cell tumor	0	0	1	0	0	0	0	1
Granulosa cell tumor	0	0	0	4	3	1	0	8
Fibroma	0	0	0	1	0	1	1	3
Fibrothecoma	0	1	0	0	1	0	0	2
SLCT	0	0	3	0	0	0	0	3
Krukenberg tumor	0	0	0	0	0	1	0	1
Total	**2**	**7**	**43**	**59**	**47**	**25**	**20**	**203**

- **Symptoms**

Out of 203 cases most common presenting complaint was pain in abdomen in 90 cases (45.81%) followed by the lump in abdomen in 80 cases (39.40%). In benign and malignant tumors most common symptom was pain in abdomen 46.00% and 47.05% respectively (Table.3) (Fig.2).

Table 3: Distribution of ovarian tumors according to symptoms

Symptoms	Benign (n=150)		Borderline (n=2)		Malignant (n=51)		Total (n=203)	
	No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%
Pain in abdomen	69	46.00	0	0.00	24	47.05	93	45.81
Lump in abdomen	62	41.33	1	50.00	17	33.33	80	39.40
Menstrual disorder	8	5.33	0	0.00	5	9.80	13	6.40
Ascites	3	2.00	0	0.00	2	3.92	5	2.46
Weight loss & anorexia	1	0.67	0	0.00	3	5.88	4	1.97
Urinary symptoms	1	0.67	0	0.00	0	0.00	1	0.49
Virilization symptoms	0	0.00	1	50.00	0	0.00	1	0.49
Primary infertility	1	0.67	0	0.00	0	0.00	1	0.49
Incidental	5	3.33	0	0.00	0	0.00	5	2.46

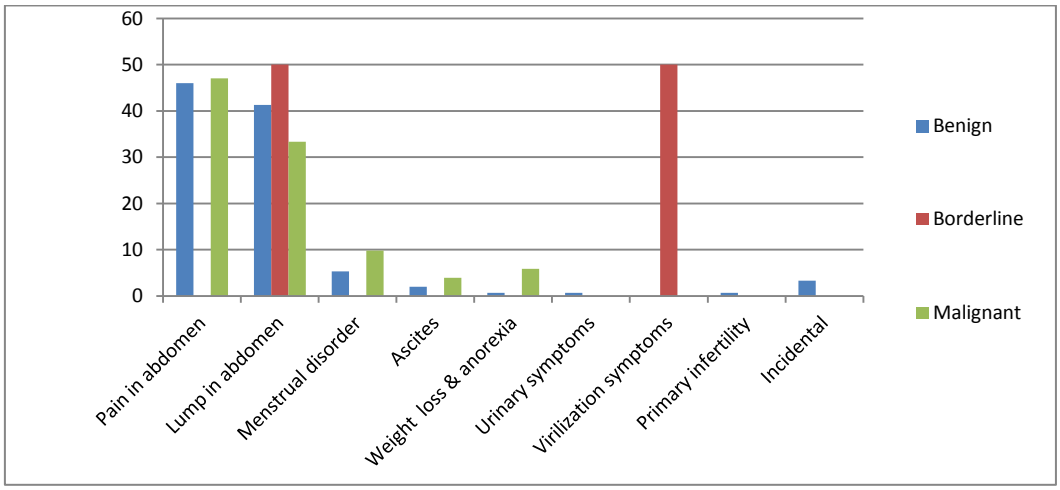

Fig.2: Distribution of ovarian tumors according to symptoms

3. Investigation profile

Ultrasonography was performed in all the cases. Fluid cytology was done in all cases with ascitis. The preoperative CA 125 value was available in total 44 cases of surface epithelial tumors (Table.4) (Fig.3).

Table.4: Distribution of ovarian surface epithelial tumors by using CA-125 value >35 U/ml as a cut off.

Type of tumor	Malignant*	Benign	Total
CA-125:>35U/ml	32	2	34
CA-125:<35U/ml	3	7	10
Total	35	9	44

*Includes borderline tumors

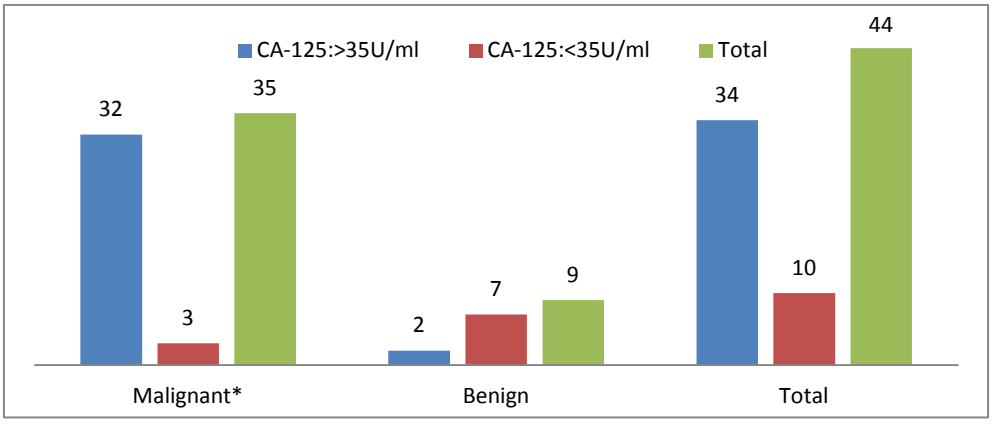

Fig.3: Distribution of ovarian surface epithelial tumors according to CA-125 value

Preoperative CA 125 was 91.42% sensitive to predict malignant behavior of ovarian neoplasm and specificity was 77.77% (Table.5).

Table.5: Preoperative CA 125 to predict malignant behavior of ovarian tumors

Sensitivity	*Specificity*	*Positive Predictive value*	*Negative Predictive value*	*Diagnostic accuracy*
91.42%	77.77%	94.11%	70%	88.63%

4. Types of operative procedures done and specimens received

The table below showing that in benign ovarian tumors most common surgical specimen was cystectomy constituting 55.33% whereas in malignant ovarian tumors most common surgical specimen was TAH+BSO (with or without omentum) which constitute 82.35%.

Discussion

Age

In the present study benign tumors were more common in the 21-40 yrs age group forming 60.66% and malignant tumors were more common after the 40 yrs of age forming 76.47%, similar observations reported by others.[6,8,9] Age seems to be no bar to the development of an ovarian neoplasm. Age range in the present study was wide i.e. 06-75 years. Almost similar age range was reported by Vora & Bhargava (1969)[8] and Swamy & Satyanarayana (2010)[6]. In a study by Prabhakar & Maingi (1989)[15] and Gupta et al (1986)[90] age range was 3 ½ to 75 yrs and 3 to 70 yrs.

In the present study germ cell tumors account for 55.55% of all ovarian tumors in patients ≤20 yrs of age. Our findings were similar with Merino & Jaffe (1993)[5], Ahmadet al (2000)[12] and Pilli et al (2002)[11] who reported the germ cell tumors 60%, 58.33% and 55% respectively in the first two decades. The present study also indicated that in the first two decades malignant germ cell tumor was the common group. Unlike malignant germ cell tumors mature cystic teratoma has wider age distribution with peak incidence in the 3rd and 4th decade similar to other Indian series.[11 &13] Findings were also similar with study in Pakistan by Ahmad et al (2000) [12] and also with western data.[5,14] In accordance with Kooning et al (1989)[14] and Pilli et al (2002)[14] the proportion of mature cystic teratomas were decreased in the present study with the advancement in age. The age range in sex-cord stromal tumors was 20-52 yrs in the present study. Granulosa cell tumor was common after the 30 yrs of age, similarly Lee et al (2011) in multicentre analysis of 113 cases of granulosa cell tumor also found that >90% of GCTs occur after the age of 30 yrs. Krukenberg tumor in the present study was found in 55 yrs aged female with known primary in GIT.

Symptoms

Following is the tabular representation of comparison of symptoms with other series.

Table.7: Comparison of symptoms in various series

Symptoms	Vora & Bhargava (1969)[81]	Jagdeshwari et al (1971)[82]	Bhuvanesh& Logambal (1978)[84]	Pilli et al (2002)[93]	Wasim et al (2009)[95]	Present study
Pain in abdomen	29.7%	30.19%	34.29%	64.9%	69.1%	45.81%
Lump in abdomen	50.3%	58.11%	54.29%	93.16%	21.8%	39.40%
Menstrual disorder	30%	5.66%	27.14%	---	---	6.40%
Ascites	1.21%	11.70%	12.86%	---	---	2.46%
Loss of weight & anorexia	22.73%	9.43%	28.57%	---	37.3%	1.97%
Urinary symptoms	1.52%	15.47%	14.2%	---	20.9%	0.49%
Virilization symptoms	---	---	---	---	---	0.49%
Primary infertility	---	---	-	---	---	0.49%
Incidental	---	---	---	---	10%	2.46%

Irrespective of benign or malignant tumors the prominent clinical features in overall ovarian tumors were pain in abdomen (45.81%) followed by a lump in abdomen (39.40%) in the present study. Vora and Bhargava (1969)[8], Pilli et al (2002)[11] from India reported lump in abdomen as chief complaint followed by pain in the abdomen. This difference in symptomatology in studies may be due to the increased awareness to get early medical advice now a day before the mass become visible or palpated. Results by Wasim et al (2009)[17] from Pakistan were similar. Pain in ovarian mass mainly occurs due to the stretching of the capsule. In accordance to Bhuvanesh & Logambal (1978)[9] and Pilli et al[11] ascites, anorexia and weight loss were more commonly associated with malignant tumors. Menstrual disorder in the form of irregular, excessive or postmenopausal bleeding was noticed in total 13 cases (6.40%) in the present study, whereas in other studies[8,9,16,10] frequency of it was higher. Asymptomatic cases were found in only benign group similar to the Wasim et al (2009).[17]

Conclusion

1) Surface epithelial tumors were the commonest variety constituting (69.46 %) of all the ovarian tumors followed by germ cell tumors (21.67%), sex-cord stromal tumors (8.37%) and metastatic tumors (0.49%).
2) Borderline tumors were encountered equally in the mucinous category (1 cases- 50.00%) and serous (1 cases- 50.00%).
3) Benign tumors were commonly recorded in 3rd and 4th decades of life and malignant tumors from 4th decades onwards.
4) Pain and lump in the abdomen were the commonest presenting complaints in ovarian tumors irrespective of their nature.
5) Ascites, anorexia and loss of weight were more commonly observed in malignant tumors.
6) Sensitivity of CA-125 to predict malignant behavior of surface epithelial tumor 91.42%, Specificity -77.77%.

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