www.jmscr.igmpublication.org
Impact Factor 5.84
Index Copernicus Value: 83.27
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v5i1.127

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Clinico Pathological Profile of Primary Ovarian Malignancy in a Tertiary Care Centre in Kerala

Authors
Anjali Devi. B[1], Ajithkrishnan. A.S[2], Hema S Nair[3]
[1,3]Associate Professors, Dept of O&G, SAT Hospital, Government Medical College, Thiruvananthapuram
[2]Clinical Epidemiologist and Additional Professor of Paediatrics, SATH, GMC, Thiruvananthapuram
Corresponding Author
Anjali Devi. B
Associate Professor, Dept of O&G, SAT Hospital, GMC, Thiruvananthapuram, Kerala, India
Email: *anjaliajithkrish@gmail.com*

ABSTRACT
Background: *Ovarian cancer has become the commonest pelvic cancer all over the world. Because of its late detection it has a poor survival rate. Hence it is important to understand the clinicopathologic profile of this malignancy so that it will help in the early identification of the disease, histological typeand possible outcome.*
Methods: *This study was undertaken in SAT Hospital, Government Medical College, Thiruvananthapuram, for a period of one year. Women referred with a provisional diagnosis of ovarian tumour were recruited. Clinical features and investigation details were collected by a structured proforma. FIGO Staging was done after staging laparotomy and histological diagnosis was made.*
Results: *58% of the ovarian tumours were primary in origin. 90% of the primary malignant tumours were surface epithelial tumours, of which 50% were serous cystadenocarcinomas and 30 % mucinous cystadenocarcinomas. Two thirds of patients with primary ovarian malignancy presented in late stages ie. Stage III or IV. Early presentation (stage 1 a) was seen in 28% of patients, majority of them were germ cell tumours. Ultrasound was able to detect evidence of malignancy in 100% of cases. CA 125 was elevated in all patients with surface epithelial tumours.*
Conclusion: *Majority of ovarian tumours were primary, of which 90% were surface epithelial tumours. Two thirds of patients presented in late stages. Ultrasound imaging along with tumour markers is a highly sensitive tool in the detection of ovarian malignancy preoperatively.*
Keywords: *ovarian malignancy, primary, histological types.*

INTRODUCTION

Ovaries are the third leading site of cancer among women, trailing behind cervical and breast cancer according to Indian cancer registries. The ovary gives rise to wider variety of tumours than any other organs of body. These present to the clinicians in number of ways. Ovarian malignancy accounts for almost 25% of all gynaecologic cancers and commonest killer of female pelvic malignancies and present greatest challenge to gynaecologic oncologist[1]. Approximately 50% of ovarian tumours are benign. Of the malignant tumours 90% are epithelial in origin while the remaining 10% include those arising in cell of sex cord or germ cell in origin or result of metastasis.

Unfortunately ovarian cancer in its early stages does not produce any symptoms or signs that

would alert clinicians to this diagnosis. This probably reflects absence of major symptoms in early stages of disease[2], due to the anatomic position of ovaries which results in minimal interference with the surrounding structures until ovarian enlargement is considerable or metastatic disease supervenes. The early detection of ovarian carcinoma continues to be a formidable challenge and an elusive task. Various methods like bimanual palpation, ultra sound, and serum CA 125 levels were used to detect ovarian malignancy. Other modalities like Doppler, CT, and MRI are also helpful in the diagnosis in special situations.

Majority of the studies were done in developed countries, where screening and early detection of ovarian cancer is possible. Hence variation in clinical presentations may be there between developing countries and developed countries. This study aims at evaluation of clinical presentations, frequency of occurrence of various histological types, usefulness of ultrasonography in identifying malignancy and the importance of tumour markers in different histological types of malignancies.

MATERIALS AND METHODS

This study was undertaken in Sree Avitom Thirunal Hospital, Government Medical College, and Thiruvananthapuram, a tertiary care centre, for a period of one year after getting approval from institutional review board. Women with a provisional diagnosis of ovarian tumour who were referred from peripheral hospitals were recruited.

All consecutive cases during the one year period were taken. Clinical features were obtained by taking history and physical examination. They were investigated with the help of ultrasound in all cases and other imaging modalities like CT scan, MRI in selected cases. Tumour markers were also done. FIGO Staging was done after staging laparotomy and histological diagnosis was made. Data were collected with the use of structured proforma. Data was coded, checked for completeness and entered in MS Excel. Statistical analysis was done with the help of SPSS programme.

RESULTS

87 women with a provisional diagnosis of ovarian malignancy were recruited in one year. One woman died before staging laparotomy and hence excluded from the study. Histological diagnosis was benign in 22%cases, borderline malignant in13% patients. In 7% of patients ovarian malignancy was due to secondary cause. Remaining 50 (58%) patients were having primary ovarian malignant tumours which were subjects of this study. Types of ovarian tumours is presented in table 1.

Table 1. Type of ovarian tumours

Type of tumour	Number of patients (N=87)	Percentage
Primary ovarian malignant tumours	50	58 %
Borderline malignant	11	13 %
Benign	19	22 %
Secondary	6	7 %
Total	87	100 %

Age distribution of patients is shown in Table 2. Age group was between 13 to 76 years. Three fourth (72%)of the patients were between 35 and 65 years.

Table 2. Age distribution

Age group	Number of patients(N=50)	Percentage (%)
Less than 20	3	6 %
20 – 34	9	18%
35 -44	10	20%
45 -54	14	28%
55 -64	12	24%
65 or above	2	4%

Pain was the presenting symptom in 78% of patients. Onset of pain was acute in most cases ie. less than 2 weeks duration. Feeling of a mass in abdomen was seen in 76% of patients. Complaints of losing weight and postmenopausal bleeding were present in minority of patients (2-4%). Clinical presentations of patients is presented in

table 3. Palpable mas was found in all patients. Consistency was varying in 60%, solid in 30% and cystic in 10% of patients. Clinically detectable ascites was found in 36% of patients.

Table 3. Clinical presentations

Symptoms	Number of patients(N)	Percentage (%)
Pain	39	78%
Feeling of mass abdomen	38	76%
Heaviness	14	28%
Abdominal distension	9	18%
Anorexia	5	10%
Dyspepsia	2	4%
Postmenopausal bleeding	2	4%
Constipation	1	2%
Losing weight	1	2%

Ultrasonography of abdomen or transvaginal USS was done in all patients. Size. Consistency, echogenicity or presence of solid particles and presence of ascites were noted. Presence of solid particles or echogenicity was the commonest finding (76% of patients). Ultra sound was able to detect at least one evidence of malignancy in 100% of patients. Ultrasonologic findings are presented in table 5. Doppler examination was done in 74% of patients. All of them showed increased vascularity.

Table 4. Ultrasonologic findings in patients

USS Findings	Number of patients (n)	Percentage (%)
Solid in consistency	18	36%
Varying consistency	32	64%
Echogenicity/ solid particles	38	76%
Ascites	23	46%
Any one finding s/o malignancy	50	100%

Tumour markers like CA 125 was done in all patients and LDH was done in selected patients. CA 125 was elevated in surface epithelial tumours. Marked elevation of CA 125 (above 500) was seen in serous cystadeno carcinoma, mixed epithelial tumours, sertoli cell tumour and clear cell carcinoma. There was no elevation of CA 125 in dysgerminoma, but teratoma showed borderline elevation of CA 125 ie. 35- 100. LDH was elevated in all the 3 patients of dysgerminoma.

Histological types and staging of primary ovarian malignancy

Tumours were classified according to the WHO classification and stage was determined according to the FIGO system.82% of primary ovarian malignant tumours were surface epithelial tumours. Second common tumours were germ cell tumour (14%). Least common were sex cord tumours. Half of surface epithelial tumours were serous cystadeno carcinomas followed by mucinous cystadeno carcinomas (30%). About two third of patients with primary ovarian malignancy presented in late stages ie. Stage III or IV. Early presentation (stage 1 a) was seen in 28% of patients only, and majority of them were germ cell tumours. Histological types and FIGO staging of patients is summarised in Table 5.

Table 5. Histological types and FIGO staging

Histological types	FIGO staging	Number of patients (N= 50)	
Surface epithelial tumours		41	
Serous cystadeno carcinoma	Ia	2	20
	Ib	2	
	IIb	2	
	IIIa	1	
	IIIc	10	
	IV	3	
Mucinous cystadeno carcinoma	Ia	3	12
	Ib	1	
	IIIc	7	
	IV	1	
Endometrioid adenocarcinoma	Ia	1	1
Clear cell carcinoma	Ia	1	3
	IIIc	2	
Mixed epithelial tumours	IIIc	4	5
	IV	1	
Sex cord stromal tumours			2
Mesenchymal tumours	IIIc	1	
Steroid cell tumours	Ia	1	
Germ cell tumours			7
Dysgerminoma	Ia	3	
Immature teratoma	Ia	2	
Mixed germ cell tumour			
Immature teratoma with EST	IIIc	1	
Teratoma with squamous cell carcinoma	Ia	1	

Profile of various histological types of tumours is given in the following tables. Age of presentation, bilaterality and tumour markers were analysed. Age of presentation of surface epithelial tumours ranged from 13- 76 years. 65% of serous cystadeno carcinoma were bilateral whereas 70% of mucinous cystadeno carcinoma were unilateral. All of surface epithelial tumours showed elevation of CA125.

Table 6. Surface epithelial tumours

Type of tumour	Number of patients	Age range(yrs)	Mean age (yrs)	Bilaterality	Tumour markers
Serous cystadeno carcinoma	20	30-63	50	65%	CA 125 elevated
Mucinous cystadeno carcinoma	12	13-65	39	30%	
Endometrioid	1	26	26	50%	
Clear cell carcinoma	3	50-58	51	33%	
Mixed epithelial tumours	5	30-76	47	43%	

Table 7. Sex cord stromal tumours

Type of tumour	Number	Age range	Mean age	Unilateral or bilateral	Tumour markers
Malignant mesenchymal tumour with Endometrioid stromal sarcoma	1	28	28	Bilateral	CA125 elevated
Steroid cell tumour	1	26	26	Unilateral	

Table 8. Germ cell tumours

Type of tumour	Number of patients	Age range(yrs)	Mean age(years)	Unilateral or bilateral	Tumour markers
Dysgerminoma	3	13-22	18	100% unilateral	LDH elevated
Immature teratoma	2	22-29	25.5		
Mixed germ cell tumours	2	25-42	33.5		

DISCUSSION

Ovarian cancer has become the commonest pelvic cancer all over the world and it is one of the cancers with worst prognosis. Because of its late detectionit has a poor survival rate, and it accounts for 6% of the cancer death in women far more than all the other gynaecological cancer combined[6]. Hence it is important to understand the clinicopathologic profile of this malignancy in our population so that it will help the gynaecologist in the early identification of the disease, probable histologic type and possible outcome[7].

In this study 58% of the ovarian tumours were primary in origin. 90% of the primary malignant tumours were surface epithelial tumours, of which 50% were serous cystadenocarcinomas and 30 % mucinous cystadenocarcinomas. This finding is similar to the observations made by Clement et al[8].Surface epithelial tumours rarely present before thirty years of age. In our study all patients were above 25 years except one patient aged 13 years who presented with a large mucinous cystadenocarcinoma.

Ovarian cancer has often been called the "silent killer" because symptoms are not thought to develop until advanced stages when chance of cure is poor. Most of the literature state that symptoms do not occur until the disease is advanced.[9] However, several retrospective studies have indicated that the majority of patients do have symptoms, although not necessarily gynaecologic in nature. Women with ovarian cancer frequently report symptoms prior to diagnosis, but distinguishing these symptoms from those that normally occur in women remains problematic[10,11]. In our study also, common symptoms like some form of pain or feeling of a mass in abdomen was seen in 76% of patients and 96 % of patients were having some symptoms like heaviness, abdominal distension, anorexia,

dyspepsia etc. Symptoms that are more severe or frequent than expected and of recent onset warrant further diagnostic investigation because they are more likely to be associated with both benign and malignant ovarian masses[12]. Screening of these patients with some symptoms may increase the chance of detecting this fatal malignancy in early stages.

The use of ultrasound as a screening tool for ovarian cancer was first suggested by Campbell et al in 1989. This investigative modality is thought to be sensitive but not specific. Various morphologic features that seem to correlate with malignancy include the presence of papillary excrescences, thick wall and multilocuated septae, internal echogenicity and presence of ascites[13]. Commonest findings were increased echogenicity (76%) and varying consistency (64%). Any one of the findings suggestive of malignancy was seen in 100% of patients.

Up to 80% of women with ovarian carcinoma of epithelial origin have elevated serum CA 125 levels, with the frequency of elevation correlating with the clinically detected stage[14].CA 125 levels are elevated in 50 % of patients with stage I and 90% of those with stage II ovarian cancer, more frequently in serous type. In our study there was a rise of CA 125 in all surface epithelial tumours. The range was 40.4 and 1943. Marked level was noted in non-mucinous surface epithelial tumours. Elevations in CA 125 levels are used as an adjunct to aid in differentiation of malignant from benign pelvic masses detected with clinical examination or imaging [15].CA 125 was not elevated in dysgerminoma but LDH elevation was seen.

CONCLUSION

58% of the ovarian tumours were primary malignant ovarian tumours. 90% of the primary malignant tumours were surface epithelial tumours, of which 50% were serous cystadenocarcinomas and 30 % mucinous cystadenocarcinomas. About two third of patients with primary ovarian malignancy presented in late stages ie. Stage III or IV. Early presentation (stage 1 a) was seen in 28% of patients only, and majority of them were germ cell tumours. Majority of patients do have symptoms, although not necessarily gynaecologic in nature. Ultrasound imaging along with tumour markers is a highly sensitive tool in the detection of ovarian malignancy preoperatively.

REFERENCES

1. Qureshi F et al. Ovarian cancer:Changes in pattern at diagnosis and relative survival over the last three decades Am J Obstetr Gynaecol.;2003: 189:1120-1127
2. 1999 Compendium of selected publications. *ACOG Educational Bulletin No. 250*. Washington, DC: American College of Obstetricians and Gynecologists; 1998:665-673
3. Hyo Young Jeoung, Han Song Choi et al The efficacy of sonographic morphology indexing and serum CA-125 for preoperative differentiation of malignant from benign ovarian tumors in patients after operation with ovarian tumors.J GynecolOncol. 2008 Dec; 19(4): 229–235.
4. Quin M Babb, P Brock et al. 2001 Cancer trends in England and Wales 1950 – 1999. Studies on medical and population subjects No.66. Stationary office London
5. Sorbe Bengt, Frankendal Bo, Veress Bela. Importance of histologic grading in the prognosis of epithelial ovarian carcinoma. Obstet Gynecol. 1982;59: 576–82
6. Katsube Y, Berg JW, Silverberg SG. Epidemiologic pathology of ovarian tumors: A histopathologic review of primary ovarian neoplasms diagnosed in the Denver Standard Metropolitan Statistical Area, 1 July-31 December 1969 and 1 July-31 December 1979. Int J GynecolPathol 1982; 1: 3-16.
7. Sorbe Bengt, Frankendal Bo, Veress Bela. Importance of histologic grading in the prognosis of epithelial ovarian

carcinoma. Obstet Gynecol. 1982;59:576–82

8. Clement PB, Young HR. Sternberg's Diagnostic Surgical Pathology, 5th Edition. Ovarian Surface Epithelial-Stromal Tumours. Lippincott Williams & Wilkins; 2010. pp. 2272–306.
9. 1999 compendium of selected publications. *ACOG Educational Bulletin No. 250*. Washington, DC: American College of Obstetricians and Gynecologists; 1998:665-673
10. Wikborn C, Pettersson F, Silfvers-ward C, Moberg PJ. Symptoms and diagnostic difficulties in ovarian epithelial cancer. *Int J Gynaecol Obstet.*1993; 42:261-264.
11. Flam F, Einhorn N, Sjovall K. Symptom-atology of ovarian cancer. *Eur J Obstet Gynecol Reprod Biol.*1988;27:53-57
12. Barbara A. Goff, MD; Lynn S. Mandel, PhDFrequency of Symptoms of Ovarian Cancer in Women Presenting to Primary Care Clinics *JAMA.* 2004;291(22):2705-2712. doi:10.1001/jama.291.22.2705
13. Stein SM et al. differentiation of benign and malignant adnexal masses: Relative value of grey scale colour Doppler and spectral Doppler sonography. Am J Roeentgenography. 1995 Feb:164 (2): 381-6
14. Munkarah A, Chatterjee M et al.update on ovarian cancer screening. Curr Opin Obstetr Gynaecol 2007 Feb 19(1) 22-26
15. National comprehensive cancer network (NCCN). Clinical practice guideline in oncology. Ovarian cancer version 3. 2012.