Clinico-histopathological analysis of neoplastic and non-neoplastic lesion of ovary in Garhwal region of Uttarakhand: A 4 year study at tertiary level hospital

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Abstract

Background: Aim of the study was to know various histopathological variants in ovarian lesion, its incidence with respect to age and to analyse the frequency of unilateral and bilateral lesion in Garhwal region of Uttarakhand.

Material and Method: Total of 325 cases of ovarian lesions were analysed retrospectively and prospectively in a period of 4 yrs during June 2010 to June 2014 to assess the various pattern of ovarian lesion. Cases were studied in detail about complete history, clinical examination and other findings

Result: Of 325 lesions, 226 (69.54%) were non-neoplastic lesions and 99(30.46%) were neoplastic lesions. Out of the neoplastic lesions 88 were benign and 11 were malignant. The most common non-neoplastic lesion seen was follicular cysts (52.21%) followed by corpus luteal cysts (35.84%). Serous cyst adenoma was the commonest benign tumour followed by mature cystic teratoma and mucinous cyst adenoma with three cases of fibroma. Serous cystadenocarcinoma were commonest malignant tumour. Mostly cysts were bilateral. Majority of cases belonged to age group between 31 to 60 years.

Conclusion: Odd geographical condition, poverty, illiteracy, lack of proper health services, lack of awareness are the main factors for late detection of ovarian lesions in this population. Clinical and histopathological examination is the main tools for early diagnosis. Newer diagnostic technique like immunohistochemistry and morphometric analysis has great prognostic significance and help to decide the line treatment.

Key words: Follicular cyst, Ovarian neoplasm, Serous tumour

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Introduction

The ovaries, which together measures only 14 grams in adult are the source of variety of non-neoplastic and neoplastic lesion due to multiple hormonal stimuli and changes undergoes from neonatal period to menopause. Most of the ovarian lesions are functional and resolve with little treatment. Large, persistent and painful cystic lesion may required surgery.[1,2] Ovarian tumour are common form of neoplasm in women and accounts for 30% of female genital cancer.[3] Ovarian carcinoma is fourth most common cause of female cancer and fourth leading cause of death among cancer death in female.[4-6] 5 year survival is 30-40% and is usually due to late detections. Tumour behaves in different ways and usually attains a large size till the time of detection. Sometime the non-neoplastic lesion can be confused with neoplasm clinically, intraoperatively and pathologicaly.[7] So that the diagnosis of different pattern of ovarian lesion is important and necessary for the proper treatment and prognosis. Early diagnosis is difficult because of its asymptomatic nature, inaccessible site and limited resources. Therefore these lesions offer a good field for research. The present study is focused on evaluation of various histopathological pattern that are more prevalent in Garhwal region of Uttarakhand, also to know the incidence of ovarian lesion in different age group and there unilateral and bilateral frequency.

Material and Method

On approval from ethical committee, in our retrospective and prospective study, 325 cases were analysed for a period of 4 years during the year June 2010 to June 2014 at in pathology department at government medical college. In retrospective study all the block and slide available in the department were studied. In prospective study, all the new cases admitted in obstetrics and gynaecological department of same institute were studied. The sample included the specimens from those patients who were treated and operated at the institute along with specimens from outside including hysterectomy specimen with unilateral and bilateral adnexa, oophorectomy and cystectomy specimen. Tissue was processed by routine paraffin techniques and sectioned stained by haematoxylin and eosin stain for microscopy examination. Immunohistochemistry (IHC) was done in difficult cases included vimentin, inhibin, CD99, cytokeratin, CK 7, CK 20, CEA, SATB2 and CEA. The data obtained consist of relevant information about age, clinical presentation, and size of tumour, provisional

diagnosis and operative findings. Data were presented as frequencies and percentages.

Result

Our hospital is tertiary level and the only govt. medical college in this area which drained the patients from the all over the Garhwal region. Out of 325 ovarian lesions, 226 (69.54%) were non-neoplastic lesions and 99 (30.46%) were neoplastic lesions. Among the total 99 (30.46%) neoplastic lesions 88 were benign and 11 were malignant lesions.(Table 1)

Among the non-neoplastic lesion (n=226), the follicular cyst (52.21%) are the common cyst followed by corpus luteal cyst (35.84%) predominantly seen in bilateral ovaries. Cortical hyperplasia is purely bilateral. Luteal cysts in 38 are unilateral and 43 are bilateral. Endometriosis and ovarian pregnancy are unilateral present as 3 and 2 cases respectively. Twisted ovarian cyst, ectopic ovarian cyst, ossification of ovary is unilateral and observed in 1 case each. The mean size of follicular cysts is 3 cm, luteal cysts is 5.5 cm and simple cysts is 6.5 cm. (Table 2)(Fig. 1 a,b,c,d)

Of the various neoplastic lesion (n=99), serous tumours are the most common neoplasm seen in 65 cases and are predominantly unilateral. In our study mucinous tumours(Fig. 2) are also predominantly unilateral and observed in 10 cases. Other common neoplastic lesions seen in unilateral ovaries are benign cystic teratoma, fibroma, and leiomyoma. Mean size of benign serous tumour is 17.5 cm, mean size of mucinous tumour is 12.25cm, mean size of fibroma is 12cm (Table 3)

Of all the benign tumours (n=88), serous tumours are the commonest accounting of 60 cases (68.18%) followed by benign cystic teratoma 15 cases (17.05%) and mucinous cyst adenoma 8 cases (9.09%). Fibroma seen in 3(3.41%) cases. Leiomyoma and endometroid tumor seen in 1 case each (1.14%) (Fig. 3 a, b, c, d)

Among the total malignant lesion(n=11), serous cyst adenocarcinoma are the commonest malignant tumours observed in 5 cases(45.45%) followed by mucinous cystadenocarcinoma 2 cases (18.18%). Granulosa cell tumour seen in 2 cases (18.18%). Dysgerminoma and krukenberg tumour seen in one case each. (Fig. 4 a, b, c, d). Immunohistochemistry is performed to diagnose the difficult cases.(Fig. 5 a, b, c, d)

It has been observed in the study that most common age group for neoplastic and nonneoplastic lesion ranges from 31 to 60 years. On the other side it is also observed that percentage of neoplastic lesion in age less than 30 year (40%) is more as compared to (27.71%) in age from 31to 60 years.(Table 4)

Table 1: Pattern of various ovarian lesion

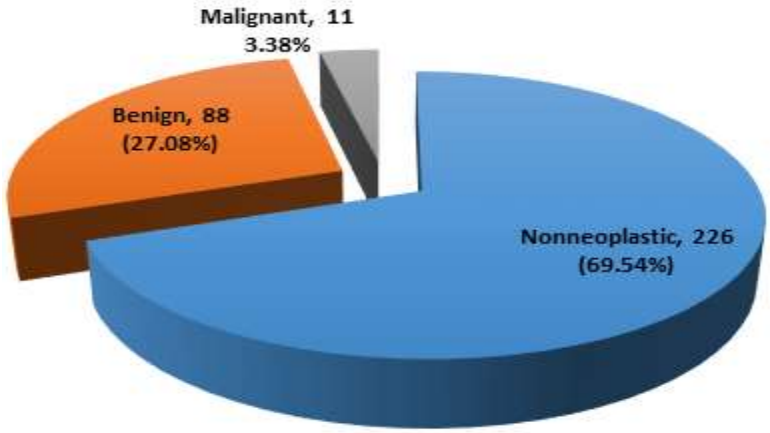


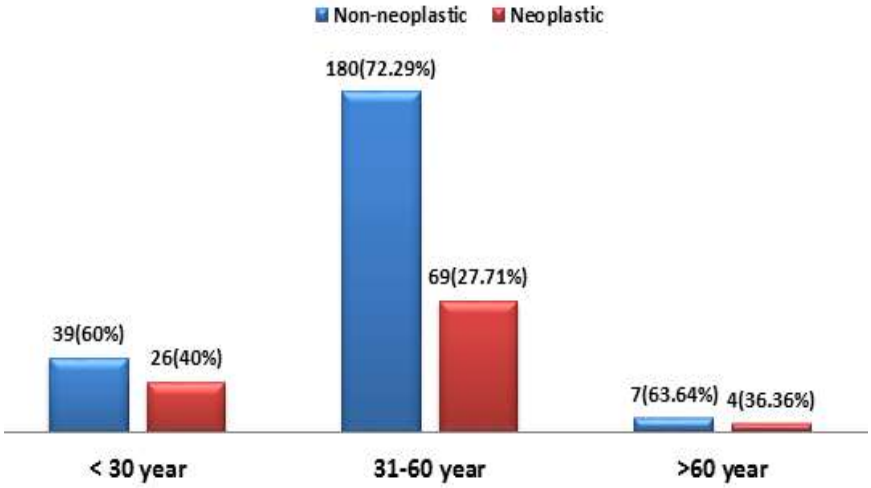
Table 2: Unilateral, bilateral, frequency and mean size distribution of non-neoplasticlesions(n=226)

Type of lesion	Unilateral	Bilateral	Total Number	Percentage	Mean size
Follicular cyst	48	70	118	52.21%	3 cm
Corpus luteal cyst	38	43	81	35.84%	5.5 cm
Simple cyst	05	05	10	4.42%	6.5 cm
Corticalstromal hyperplasia	00	04	04	1.77%	3.25 cm
Stromal hyperthecosis	04	00	04	1.77%	3.5 cm
Hylarcellhyperplasia	01	00	01	0.44%	3.5 cm
Twisted ovarian cyst	01	00	01	0.44%	5.0 cm
Ovarian pregnancy	02	00	02	0.88%	4.75 cm
Endometriosis	03	00	03	1.33%	4.5 cm
Ectopic ovarian cyst	01	00	01	0.44%	3.0 cm
Ossification of ovary	01	00	01	0.44%	2.75 cm

Table 3: Unilateral, bilateral, frequency and mean size distribution of neoplastic lesions (n=99)

Type of lesion	Tumor name	Unilateral	Bilateral	Total number	Percentage	Mean size
Benign (n=88)	Serous tumor	49	11	60	68.18%	13.5 cm
	Mucinous	06	02	08	9.09%	12.25 cm
	Benign cystic Teratoma	15	00	15	17.04%	12.5 cm
	Fibroma	03	00	03	3.40%	16.0 cm
	Leiomyoma	01	00	01	1.14%	12.0 cm
	Endometroid	01	00	01	1.14%	6.7 cm
Malignant (n=11)	Serous cystadenocarcinoma	04	01	05	45.45%	15.5 cm
	Mucinous cyst adenocarcinoma	02	00	02	18.18%	12.0 cm
	Granulosa cell tumor	02	00	02	18.18%	16.5 cm
	Dysgerminoma	01	00	01	9.09%	12.5 cm
	Krukenberg	00	01	01	9.09%	16.2 cm

Table 4: Frequency distribution of non-neoplastic & neoplastic lesions with respect to age



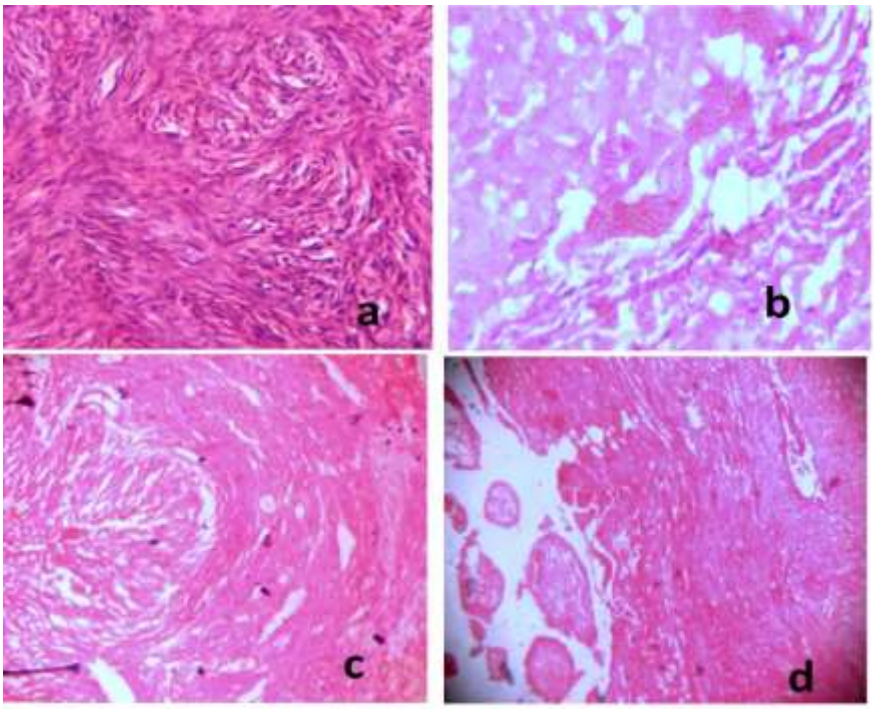


Fig. 1: Photomicrograph showing histopathological features of non-neoplastic ovarian lesions: a) Cortical stromal hyperplasia b) Ossification of ovary c) Luteal reaction d) product of conception in ovary

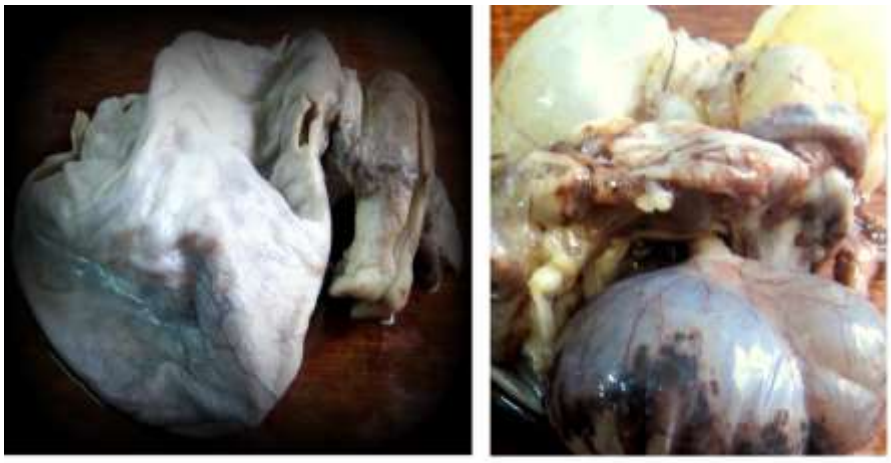


Fig. 2: Photograph showing in gross a) Serous adenoma b) mucinous adenoma

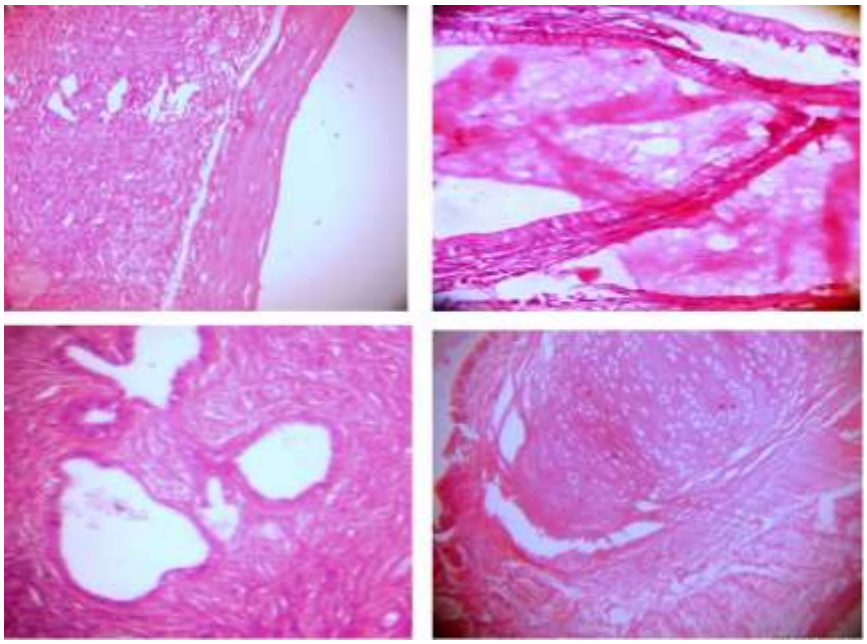


Fig. 3: Photomicrograph showing histopathological features of benign neoplastic ovarian lesions: a) Serous cyst adenoma b) Mucinous cyst adenoma(tall coloumnar cell lining and mucin) c) Endometroid tumor (endometrial gland in ovarian stroma) d) Benign cystic teratoma (Cartilage, Squamous cell lining, sebaceous gland)

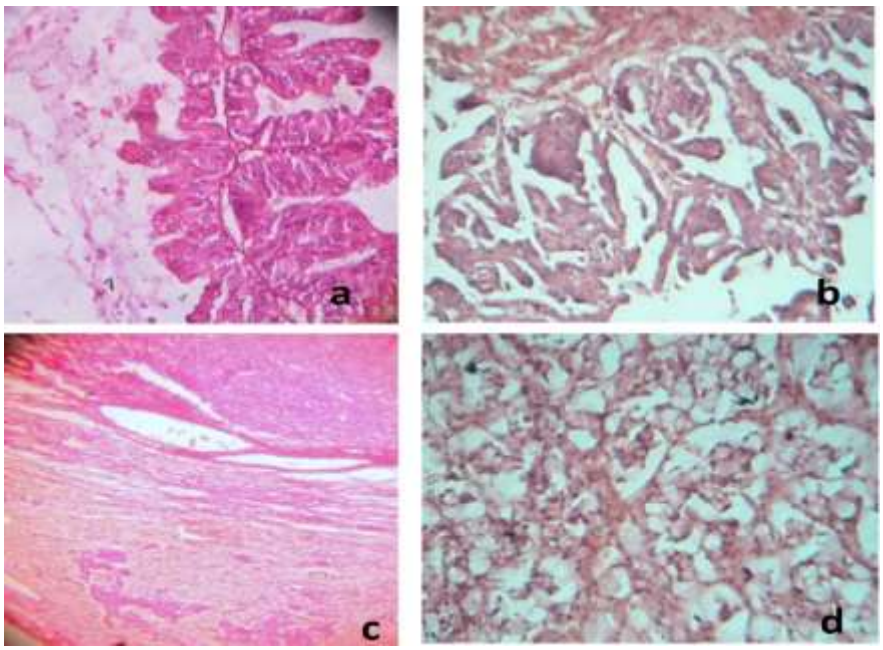


Fig. 4: Photomicrograph showing histopathological features of malignant neoplastic ovarian lesion(H&E stain): a) Borderline papillary cyst adenoma b) Paillary serous cyst adenocarcinoma(hyperchromaisa and prominent nucleoli) c) Granulosa cell tumour (granulose cell invasion seen in ovarian stroma) d) Krukenberg tumor showing signet ring cell in ovarian stroma

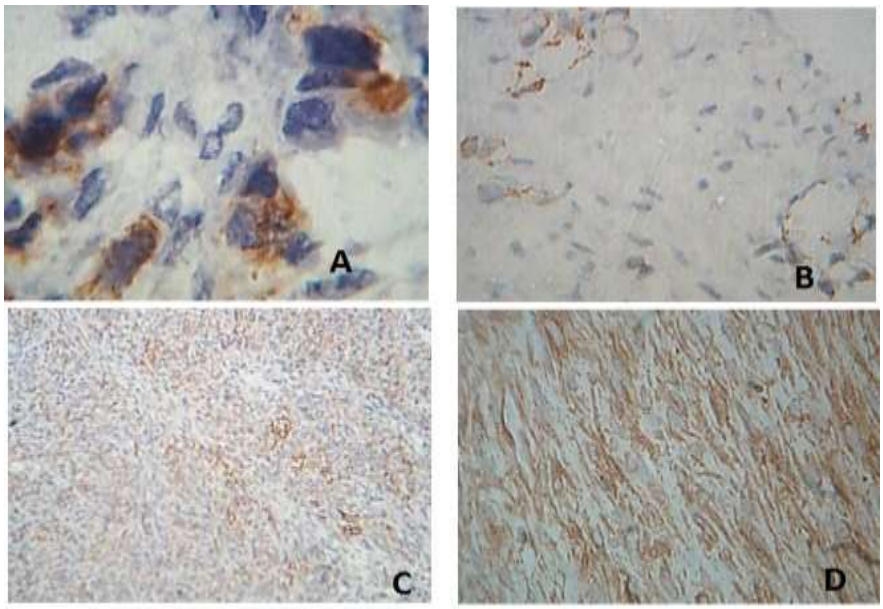


Fig. 5: Photomicrograph showing immunohistochemistry positivity a) CEA in krukenberg. b) CK7 in Krkenberg c) CD99 in granulose cell tumor d) Vimentin in fibroma

Discussion

Ovary is an important organ as it is concerned with the production of progeny. The ovary consists of sex cells and mesechymal cells which are totipotential and multipotential respectively. So when it becomes neoplastic, almost any types of tumour can result.[8] Ovary is second most common site for cancer in the female pelvic reproductive organ, and is associated with the highest mortality rate.[9] Due to similar clinical presentations there is confusion in the diagnosis of nonneoplastic and neoplastic lesion of ovary although it is diagnosed as a mass or cystic lesion on ultrasonography and hence removed prophylactically in routine oophorectomies and hysterectomies.[10]

In current study of 325 cases of ovarian lesion, nonneoplastic lesion was diagnosed in 69.54% and neoplastic lesions were diagnosed in 30.46% cases. These findings matches with findings of previous studies.[11,12]

In present study among the various non-neoplastic lesions, follicular cyst (52.21%) are predominantly seen in bilateral ovaries followed by corpus luteal cyst (35.84%). Our findings are similar with the studies done by Krewzer GF et al (follicular cyst 55% and corpus luteal cyst 45%) and Kanthikar et al (follicular cyst 74.66% and corpus luteal cyst 20%).[13,14]

Endometriosis is common condition found in female of child bearing age. Ovary and posterior cul-de sec are considered as the most favourable site for endometriosis.[15] We found three (1.33%) cases of endometriosis in ovary. The findings of our study are compatible with Gupta et al in which endometriosis was present in (2.9%) cases.[16,17]

Serous tumour are the most common, among various neoplastic ovarian tumour and are predominantly unilateral followed by mature cystic teratoma and mucinous cystadenoma.[18] Vaidya et al in their study observed serous tumor in 58.23% cases and mucinous tumors in 36.08% cases. Ong et al found that teratoma is the commonest benign ovarian neoplasm.[19] Samina et al reported in their study benign serous tumour 38.06%, mature cystic teratoma in 19.35% and mucinous tumour in 18.70% cases.[20] In current study of all the benign neoplasm, serous tumour (68.18%) were the commonest followed by benign cystic teratoma (17.05%) and mucinous tumour (9.09%). These findings are consistent with previous study.

Endometroid tumour, leiomyoma, fibroma are rare tumour and mainly unilateral.[21,22] We found one case each of endometroid tumour and leiomyoma. We reported three cases of fibromas in 22 year, 30 years and 55 year respectively.

Borderline tumor are of low malignant potential having favourable prognosis and usually present in early age.[23] The incidence of these tumor consist of 4-14% of all the epithelial tumor.[24] We reported two cases of borderline serous papillary neoplasm (3.33%) in 27 year and 42 year aged female. Our findings are compatible with previous studies.

Off all the neoplastic lesions, in present study, serous cystadenocarcinoma are the commonest comprises of 45.15% followed by mucinous cystadenocarcinoma in 18.18% cases. Jja et al.in their study found surface epithelial tumour 52.2% as commonest findings followed by germ cell tumour (42.2%).[25] These findings are further strengthen by the study performed by Vaidya et al that serous cystadenocarcinoma are the most common malignancy observed in ovary.

Clear cell carcinoma represent approximately 5% and endometroid carcinoma represent 10-15% of all ovarian carcinoma.[26] We found no case of clear cell carcinoma and endometroid carcinoma in our study.

Of the entire germ cell tumour, mature cystic teratoma is the most common only benign tumour of the germ cell.[27] this consistent with our findings. Other germ cell tumour is malignant which account for less than 5% of all malignant ovarian tumours. Dysgerminoma and endodermal sinus tumour are the rare malignant tumour usually occurs in the second decade of life.[26] In our study we found only one case of dysgerminoma and no case of endodermal sinus tumour. Our findings are consistent with these facts.

Sex cord stromal presents in all age group and constitute 8% of all ovarian neoplasm. Adult granulose tumour are more common than the juvenile and occur mainly in pre and postmenopausal women.[28] In our study we found one case of juvenile granulose tumour in 9 year girl with precocious puberty and one case of adult in 45 years female. Both the tumour was having unilateral presentation. The findings are concurred with earlier studies.

Metastasis to ovaries are relatively frequent with most being from endometrium ,breast ,colon, stomach and cervix.[26] However in the present study there was only single cases of Krukenberg tumour in 25 year female which was bilateral and the primary was seen in stomach.[29]

The size of tumour in most of the malignant and benign tumour was more than 12 cm .However the mean size of follicular cyst was 3cm, luteal cyst 5.5, simple cyst was 6.5cm. These findings of present study was compatible with reported by Mesogitis et al[30] Immunohistochemistry is an important diagnostic tool in the evaluation of difficult cases for accurate and proper diagnosis.[31] We also confirmed cases like krukenberg tumour, granulose cell tumour, fibroma by performing immunohistochemistry.

Majority of cases of ovarian lesion present in the age group between 31-60 years. In the study done by vaidya et al most benign tumour were diagnosed in 3rd and 4th decade and most malignant tumour (50.88%) were seen in after the 4th decade. In present study commonest age for the ovarian lesion was ranges 31 to 60 years and competent with the studies. But however the overall percentage for neoplastic lesion was more common in less than 30 years (40%) as compared to 27.71% in 31-60 years. One of the possibilities for it may that usually in young age clinician preserve the nonneoplastic ovary. It may be due to pattern of cases reported in this hospital. These young patients may come in late stage of tumor, and operation remain the only line of treatment. The difference may also due geographical distribution. So a large homogenous detailed study is required for further evaluation.

Conclusion

Odd geographical condition, poverty, illiteracy, lack of proper health services, lack of awareness are the main factors for late detection of ovarian lesions in this population. Clinical and histopathological examination is the main tools for early diagnosis. Newer diagnostic technique like immunohistochemistry and morphometric analysis has great prognostic significance and help to decide the line treatment.

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