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Original Research Paper

Study of Clinocopathological Aspects of Ovarian Tumours with Review of Literature for A Period Five Years

Medical Science

KEYWORDS : Histopathology ,ovarian tumours, Types and subtypes

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ABSTRACT

Ovary is a unique organ in the body which can be seat of large number of neoplasm with wide spectrum of histological types. In general ovary is a complex structure from an embryological, anatomic and functional stand point of view. So it is very hard to understand ovarian growths. Cancer of ovary is third most frequent gynaecological malignancy after those of cervix and endometrium. It carries a higher mortality rate than all other genital cancer deaths in female. Accurate histological diagnosis is often a critical factor in achieving an optimum treatment response. Silverberg made an important point that Histological typing is more valuable than grading in predicting survival But grading is better at predicting tumour responsiveness to chemotherapy and even as a guide as to which agents should be used. So both type and grade should be specified in the pathology report

INTRODUCTION

Ovarian tumours may be encountered in females of all ages and ethnic groups. Youngest being a 30 week old fetus with a bilateral unclassifiable ovarian tumour and the oldest being a 92 year old woman (Janovski, 1973)(1). Neoplasms of germ cell origin are more frequent in the first two decades of life and in adult life neoplasms of non-germ cell origin are more common. Approximately 80% of all ovarian neoplasms are benign and the peak incidence of benign tumours of the ovary is in the age group 20-45 years. Many people including Indians studied ovarian tumours. Phillip et al. (1971) studied 305 teratomas in 20 year study. Kurman & Norris (1976) studied 17 cases of endodermal sinus tumours and 15 cases of embryonal carcinoma in detail. Alam I et al1. (2001), Shah P.K et al.(1991) and Sudharshan Vora et al (1969) reported 1.86%,2.96% and 4.1% incidence of ovarian tumours among gynecological admissions(2,3,4). Neoplasm of the ovary presents a widespread Challenge to different Medical Specialties. Natural history and response to treatment vary considerably from one group of tumors to another especially in the area of chemotherapy and radiotherapy. Most of the patients already have tumour in the pelvis or abdomen outside of the ovary at the time of diagnosis(5).

MATERIALS AND METHODS

Present study is for 5 years which includes a retrospective study of biopsy material received between years 2010-2012 was reviewed. Later the prospective aspects of ovarian tumours between 2012-2015 was done.

The following particulars were recorded for each tumour. 1. Age of patient 2.Clinical features and diagnosis 3.Operative findings 4.Gross characteristics 5.And finally histopathological features.

Each tumour was described in detail as regard to weight, colour and shape, Consistency (when fixed), size, appearance of the cut surface. Several bits were taken from appropriate sites for processing and paraffin embedding.The paraffin blocks were taken and stained by haematoxylin and eosin. Special stains36 like reticulin , PAS e.t.c were used where ever necessary .

Finally a detailed study of ovarian tumours was done over a period of 5 years taking into account the following details. 1.General incidence of ovarian tumours 2.Age incidence 3.Side incidence and bilaterality 4.Gross appearances 5.Histopathological features 6.Common and rare tumours.

RESULTS AND OBSERVATIONS

a) A total number of 149 ovarian tumours were received during 5 years period from 2010 to 2015. Total number of biopsies received in 5 years = 11883, Total number of Ovarian tumours = 149 , So the incidence of ovarian tumours among total biopsies = 1.25%

b) Total number of gynaecological admissions occurred in the gynaecological department during the same 5 year period were 10,348. Among these admissions 149 patients were having ovarian tumours forming an incidence of 1.44%.

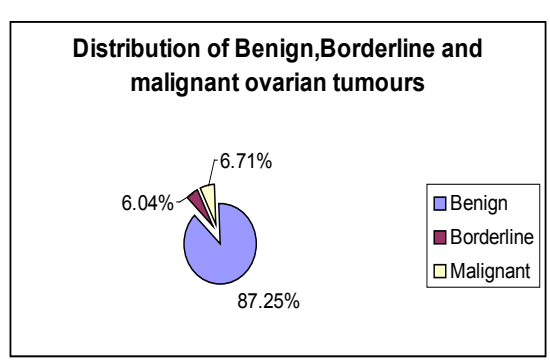
c) Total number of malignant tumours received in 5 year period were 1061.

Among 149 ovarian tumours, 130 tumours were benign and remaining 19 tumours were borderline malignant and frank malignant tumours.

Total number of malignant ovarian tumours = 19.

So the incidence of ovarian malignancy among all malignant tumours = 1.79%.

d) Basing on recent WHO histological classification of tumours of the ovary. and Morphology code of the international classification of diseases for oncology(ICD-O)18 out of total 149 ovarian tumours recorded in the present study Incidence of benign ovarian tumours were 87.25%, Incidence of ovarian tumours with borderline or uncertain behavior was 6.04%, and incidence of frank malignant tumours were 6.71%.



e)Among 149 ovarian tumours majority were Surface epithelial-Stromal tumours(126) with incidence of 84.56%. Sex cord-Stromal tumours were 10 with 6.72% incidence, Germ

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cell tumours were 11 with 7.38% incidence and one secondary tumour, one soft tissue tumour not specific to ovary was found with incidence of 0.67% each.

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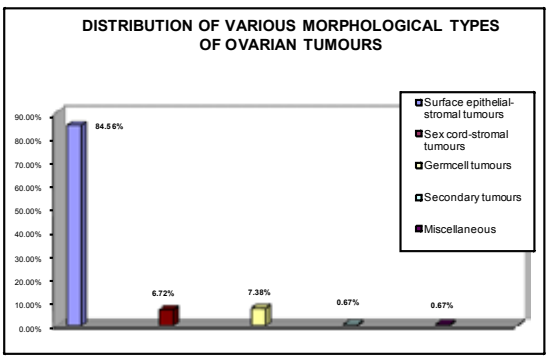
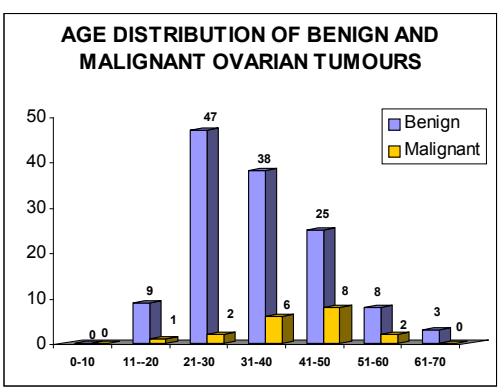


f)Peak incidence for ovarian tumours was observed between 21-50 years. Oldest case in the present series was 66 year old female and youngest case was 15 year old female. Most of the benign tumours were seen in the 2nd and 3rd decades. Majority of malignant cases were seen after 40 years.



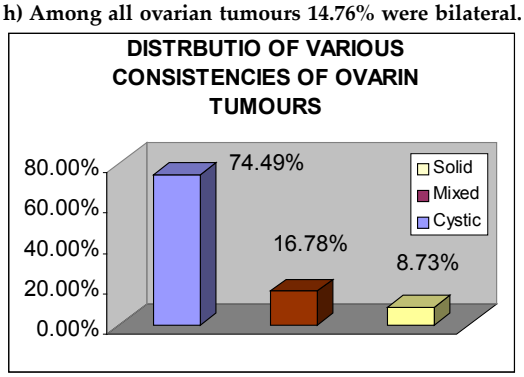
g) On gross examination among the total ovarian tumours 74.49% were cystic, 16.78% were partly cystic and partly solid, and 8.73% were solid in consistency.

Among all benign tumours majority were cystic with 84.61%.

Among borderline tumours most of them were mixed in consistency.

Almost all of the malignant tumours were either solid or mixed in consistency.

h) Among all ovarian tumours 14.76% were bilateral.

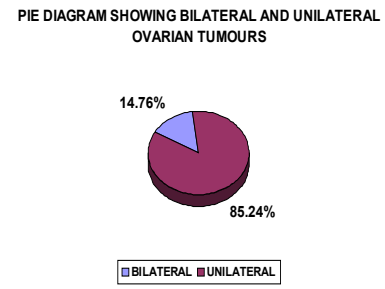


Most of the benign tumours were unilateral forming 87.7% unilaterality among all benign tumours.

Among borderline tumours majority were unilateral.

Among frank malignant tumours bilaterality(31.57%) was more when compared with benign tumours.

Among unilateral tumours 57.48% were seen on right side and 42.52% were seen on left side.



i) Various histological types, most common tumour and rare tumours found in the present study(Figure 1 to Figure 6)

Figure 1- Serous cystadenoma of ovary (H&E)

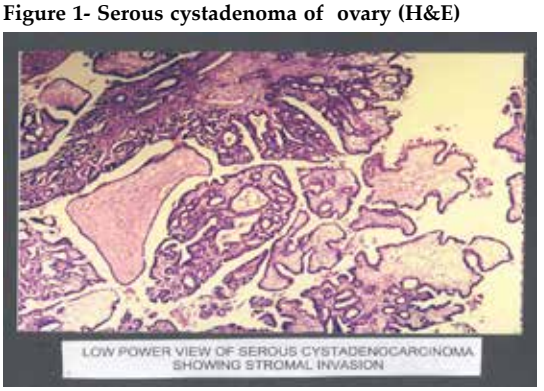


Figure-2 Serous cystadenocarcinoma showing stromal invasion (H&E)

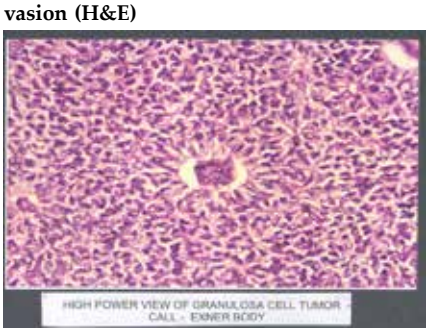


Figure 3 – Granulosa cell tumour showing call exner body

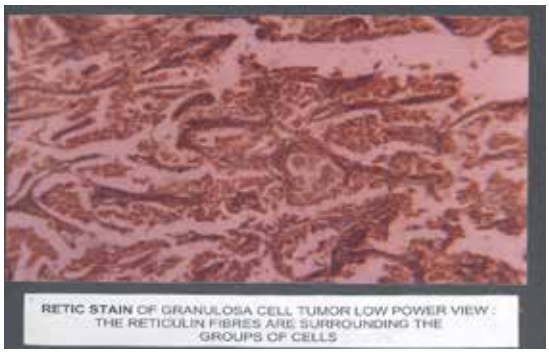


Figure 4 – Reticulin stain of granulose cell tumour, groups of cells are surrounded by reticulin stained fibers

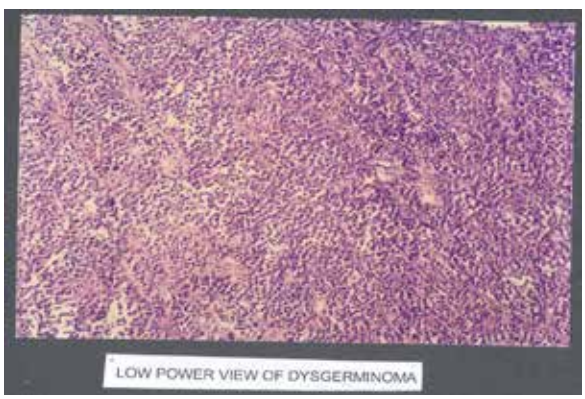


Figure 5 – Low power view of dysgerminoma

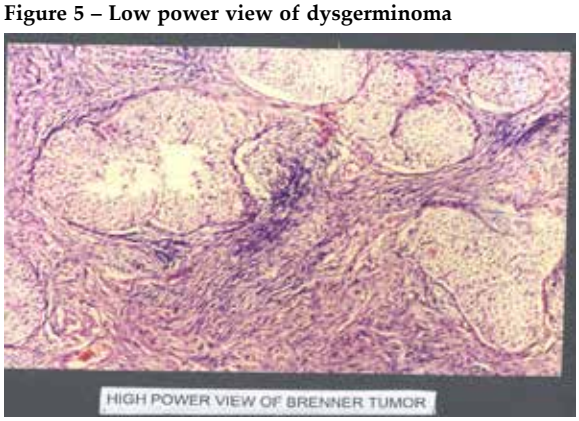


Figure 6- High power view of Brenner tumour

DISCUSSION

Many people around the world including Indians studied ovarian tumours. Some of the recent and relevant works on ovarian tumours pertaining to present study were reviewed.

In this part first we discussed features pertaining to all ovarian tumours and then feature pertaining to various histological groups of ovarian tumours encountered during the study.

I) Feature pertaining to all ovarian tumours

Ovarian tumours are not a common gynaecological complaint. Out of 10,348 patients admitted for gynaecological problems during the period June 2000-May 2005 in our hospital 149 were having ovarian tumours and the incidence of ovarian tumours were 1.44% among all gynecological problems. Alam I et al.1 (2001) in their study at Ayub Medical College, Abbottabad reported a total of 1400 admissions in 24 months and 26 had ovarian tumours with an incidence of 1.86%. Shah, P.K. et al.65 (1991) in their study noted 370 ovarian tumours out of 12525 gynecological admissions with an incidence of 2.96%. They also reported an incidence of 0.43% in child hood and adolescence for 53 cases of ovarian tumours observed out of 12525 gynecological admissions(2,3,6). Similarly Chakrabortti et al.12 (1990) and Sudharshan vora et al. (1969)74 reported on incidence of ovarian tumours as 1.29% and 4.1% respectively among all gynecological admissions(7,8).

S.No.	Author	Incidence
1	Alam et al.1 (2001)	1.86%
2	Shah.P.K. et al.65 (1991)	2.96%
3	Chakrabortti et al.12 (1990)	1.29%
4	Sudharshan vora et al.74 (1969)	4.10%
5	Present Study	1.44%

Our incidence in nearer compared to that of Chakrabartti et al.(1990) and Alam I et al. (2001) Where as Sudharshan Vora et al. reported high incidence(2,3,9).

Among total malignant tumours of 1061 ovarian malignant tumours were 19 forming an incidence of 1.79%. This was nearly half when compared to the incidence of ovarian malignancies among total malignant tumours in Tata memorial hospital, Bombay (1986) and PGI Medical education, Chandigarh (Paintal A.S51, 1986) which was 3.38% and 3.09% respectively(6,8,10).

Benign ovarian tumours are common compared to malignant ovarian tumours. At Abbottabad, Ayub Medical College, Alam I et al.1 (2001) reported in their study 77% of the ovarian tumours was benign(8,11,12). J.Y. Obed et al.48 (1999) and D.N. Bobzom et al.10 (1997) in different areas of Nigeria reported incidence of benign tumours 79 % and 81% respectively among total ovarian tumours(13,14,15). In India Bhatttacharya et al. 8 (1980) reported 69.20% were benign and 30.80% were malignant among total ovarian tumours. In our study out of total 149 ovarian tumours recorded in the present study Incidence of benign ovarian tumours were 87.25%, Incidence of ovarian tumours with borderline or uncertain behavior was 6.04%, and incidence of frank malignant tumours were 6.71%(2,6,8,16).

Age incidence, Ganga S Pilli et al.24(2002) reported that the peak incidence of ovarian tumours was in the 3rd and 4th decades accounting to 55.7%.The youngest case in their series was an 8th month old female child who had endo dermal sinus tumour. Vaiphei K et al.79(1990) In their study of Malignant tumours of ovary at PGI, Chandigarh maximum number of malignant tumours were seen in the Sixth decade though 54 percent of the tumours were seen in the latter half of the reproductive life. In the present study 52.64% of malignant tumours were seen between 41-60 years that was in the latter half of reproductive life which was similar to the findings of Vaiphei K. et al. (1990) 79. Present study also revealed that the ovarian tumours occurred between the age ranges of 15-66 years(17). Peak incidence between 21-50 years. Most of the benign ovarian tumours were occurred in the 2nd & 3rd decades and most of the malignant ovarian tumours were seen after the age of 40 years. These findings are well correlated with finding of Ganga S Pilli et al.24 (2002) and Bhattacharya MM et al.8 (1980).

Side incidence, Most of the ovarian tumours are unilateral. No predilection for either ovary has been found. With the exception of dysgerminoma and Brenner tumours (janovski 1973).(18) Ganga S Pilli et al. (2002) in their study stated

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that most of the benign (92.2%) and all border line tumours were unilateral, 25.8% of malignant tumours showed bilaterality(11,19). In Prabhakar et al. (1989) studies 90.89% of ovarian tumours were unilateral where as Gupta et al. (1986) reported 87.95% incidence for unilateral ovarian tumours(20,21). Present study revealed that 14.76% of all ovarian tumours were bilateral. 31.57% of malignant tumours were bilateral while 12.3% of benign tumours were bilateral(22,23). Overall incidence of bilaterality was well correlated with Bhattacharya MM et al. (1980). But bilaterlity in the benign tumours has shown double the percentage in the present study when compared with Bhattacharya MM et al. (1980) and Ganga S Pilli et al.24 (2002). Among unilateral ovarian tumours 57.48% are seen on right side and 42.52% are on left side. This was well correlated with Ganga S Pilli et al. (2002).

Gross appearance, Ganga S Pilli et al. (2002) reported that183 (86.3%) out of 212 benign tumours were cystic. All borderline tumours were cystic. Among malignant tumours 37(59.7%) were solid to cystic,21 (33.8%) were solid, and remaining were cystic in consistency. Gupta l et al.(1986) reported 8.38%, 61.38% and 29.64% incidence for solid, cystic and mixed consistent ovarian tumours. In the present study among the total ovarian tumours 8.73% are solid, 74.49% are cystic and 16.78% are mixed in consistency. Also in the present study most of the benign tumours(84.61%) were cystic in consistency which was noted in the present study is in total agreement with Olanrewaju S and Charles Cox (2002) who stated that out of 130 Benign 110 are cystic with 84.62%,and Ganga S Pilli et al. (2002). Among border line tumours one was cytic, others were mixed in consistency. All malignant tumours were solid or mixed in consistency.

II) Features pertaining to various histological groups of ovarian tumours

Surface epithelial-Stromal tumours are the most common group of ovarian neoplasm, and also include the majority of malignant tumours. Ganga S Pilli et al. (2002) reported 70.9% incidence for surface epithelial – stromal tumours. In the present study among 149 ovarian tumours 126 were surface epithelial and stromal tumours forming an incidence of 84.56% which was little nearer Ganga S Pilli et al. (2002), Mishra et al. (1991)(25,26) .Present study reported 5 cases of borderline surface epithelial - stromal tumours with an incidence of 3.35% among all ovarian tumours. This was high when compared with Prabhakar et al. (1989) and Gupta et al. (1986) and nearer to Ganga S Pilli et al (2002). In our study 7 malignant epithelial tumours formed an incidence of 4.69% among all ovarian neoplasms which was very low compared to Gupta et al.(1986),Mukharjee et al. (1991) and Ganga S Pilli et al. (2002).

Sexcord-stromal tumours account for about 8% of ovarian neoplasms.(27) Ganga S Pilli et al.(2002) in their study noted 6.7% incidence for sex cord-stromal tumours. Radha Ramachandra pai et al.(2000) reported 5.7% of Sex cord stromal tumours among all ovarian neoplasms.In the present study 10 Sex cord stromal tumours comprised 6.72% incidence among all ovarian neoplasms. This incidence was similar to Ganga S Pilli et al(2002), Bhattacharya MM et al.(1980) and little less when compared to Gupta et al. (1986) and Prabhakar et al. (1989). Where as high when compared to Misra R.K. et al. (1991), Radha Ramachandra pai et al. (28) (2000). In the present study most of the sexcord-stromal tumours were seen in the age range of 20-40 which was similar to Ganga S Pilli et al. 24 (2002). In the present study 8(80%) cases of sex cord –stromal tumours were solid and 2(20%) were mixed in consistency. Ganga S Pilli et al. (2002) reported that all the sex cord stromal-tumours recorded in their study were unilateral. In the present study 9 were unilateral and one was bilateral.

Germ cell tumours, Ganga S Pilli et al.24 (2002) reported 21.2% incidence for germ cell tumours among all ovarian tumours.In the present study among 149 ovarian neoplasm's 11 were germ cell tumours formed an incidence of 7.38%. Our findings are low compared to Ganga S Pilli et al. (2002), Bhattacharya MM et al. (1980), Prabhakar BR et al.(1989), Mukharjee Chanda et al. (1991). Sahu et al.66 (1990) reported majority of germ Cell tumours was occurred in the age range of 11-30 years of age. In the present study age range was 19-50 years and most of the tumours occurred below the age of 30 years.

Soft tissue tumour, Bhattacharya MM et al. (1980) reported one case of soft tissue tumour, which was not specific to ovary with an incidence of 0.40%.In the present study we also recorded one soft tissue tumour not specific to ovary with an incidence of 0.67%.

Metastatic tumours,Ganga S Pilli et al. (2002) reported 2 cases (0.7%) of metastatic tumours among all ovarian neoplasms.Bhattacharya MM et al. (1980) Prabhakar et al.52 (1986) reported 3.2%, 6.28% and 3.14% incidence of metastatic tumours in the ovary among all ovarian neoplasms. In the present study we noticed 0.67% incidence of metastatic tumours in the ovary among all ovarian neoplasm's which was less compared to Bhattacharya MM et al (1980) Prabhakar et al.(1989) and Gupta et al. (1986)but similar to Ganga S Pilli et al. (2002) . Most common sources for metastatic tumours according to literature are the stomach, large bowl, appendix, breast, uterus, lung and skin. Over half of the tumours are bilateral.(24) In our study we noticed one ovarian metastatic tumour which was metastasized from endometrium and it was bilateral and solid in consistency.

SUMMARY

1. A total of 10,348 Patients were admitted for gynaecological Problems during studied 5 years. A total of 149 ovarian tumours formed 1.44% of incidence of ovarian tumours among the gynaecological Adminious.
2. A total of 2872 Tumours were received in the department of Pathology.Among these 149 were ovarian tumours with an incidence of 5.19%.
3) Benign ovarian tumours were common compared to Malignant ovarian tumours. Relative incidence of Benign, borderline malignant and Malignant ovarian tumours were 87.25%, 6.04% and 6.71% respectively.
4) Ovarian tumours occurred with in the age range of 11-70 years.
   Most of the benign tumours occurred in the age range of 21-40 years. Where as the malignant tumours mostly seen after the age of 40 years.
5) Surface epithelial – stromal tumours formed major group comprising 84.56% of all ovarian neoplasms.
   Malignant serous tumours were the commonest malignant tumours with an incidence of 4.02% among all ovarian neoplasms.
6) Sex Cord stromal tumours have formed 6.72% incidence among all ovarian neoplasms.
7) Germ cell tumours have formed 7.38% incidence among all ovarian neoplasms.
8) Secondary tumours in the ovary have formed 0.67% incidence among all ovarian Neoplasms.
9) Rare tumours encountered are endoderml sinus tumour, hemangioma.
10) Overall bilaterality of ovarian tumours was 14.76%.

Among Malignant tumours 31.57% were bilateral and Among Benign tumours 12.30% were bilateral. Among unilateral ovarian tumours 57.48% are seen in the right ovary and 42.52% are seen in the left ovary.

Among 149 ovarian tumours 22 were bilateral with an incidence 14.76%. Among the Malignant tumours (19) 6 were bilateral forming an incidence 31.57%. Among the Benign tumours (130) 16 were bilateral giving incidence of 12.3%..Among 27 unilateral tumours 57.48% were seen in the right ovary and 42.52% were seen in the left ovary.

11) On gross examination 111 (74.49%) among 149 tumours were cystic, 25(16.78%) were partly solid and partly cystic 13(8.73%) were solid in consistency. Among the benign tumours 84.62% were cystic in consistency and among malignant tumours majority were solid (36.84%) or mixed (57.89%) in consistency.

REFERENCES

1. ALAM-I, Waqar F, Khan A, Begum N; prevalence and management of ovarian tumours in women and children hospital Abbottabad. J. Ayub Med coll Abbottabad. 2001 Apr-June, 13(2): 19-21.
2. Aure, J.C. Hoeg, K. and Kolstad, P.: Clinical and Histological Studies of ovarian carcinoma. Long-term follow up of 990 cases. Obstet. Gynecol 37: 1-9, 1971.
3. Bennington, J.L., Ferguson, B.R., and Haber, S.L. Incidence and relative frequency of benign and malignant ovarian neoplasms. Obstet. Gynecol. 32 : 627-632, 1968.
4. Bhattacharya MM, Shinde SD, Purandare VN; A Clinicopathological analysis of 270 ovarian tumours, Journal of postgraduate Medicine, Vdune-26, imue-2, page 103-7, 1980.
5. Bobzom DN, Unuigbe JA; Types of ovarian tumours seen in Benin city Nigeria; Journal of obstetrics and Gynaecology, volume 17, Number/ January' 1997.
6. Chakrabortti D.K. & Cheo Min Sandra Lee. Epidemiological study of ovarian neoplasm's. J.Obstet. Gynaec. India. 40: 582 to 586, 1990.
7. Ehrlich, L.E. Roth L.M : The Brenner tumor : Clinicopathologic study of 75 cases. Cancer 27 : 332-342, 1971.
8. Evans, A.T., Gaffey, T.A., Malkasian, G.D., Jr., Annegers, J.F. Clinicopathologic review of 118 granulosa and 82 theca cell tumors. Obstet. Gynecol. 55 : 231-238, 1980.
9. Fritz A, Percy C, Jack A,Shanmugaratnam K, Sobin LH,Parkin DM,Whelan S (2000).International classification of diseases for oncology(ICD-0) 3RD ED,WHO-Geneva.
10. Fox H, Agarwal, K. Langley, F.A. : A Clinicopathologic Study of 92 cases of granulosa cell tumor of the ovary with special reference to the factors influencing prognosis. Cancer 35 : 231-241, 1975.
11. Fraumeni J R Jr., Grundy G W, Creagan E T, Everson R B : Six families prone to ovarian cancer. Cancer 36 : 364-369, 1975.
12. Fusey, S.S., Wairagade, S.R., Kakde, P., Deshmukh, M.B : Analysis of ovarian tumors in teenage. J. Obstet Gynecol. India. 188-122, 1992.
13. Gallion, H.H., Van Nagell. J.R., Jr., Donaldson E.S., Powell, D.E. : Ovarian dysgerminoma. Report of 7 cases and review of the literature. Am. J. Obstet. Gynecol. 158 : 591-595, 1988.
14. Ganga S Pilli,K P Suneeta, A V Dhaded, V V Yenni; Ovarian tumours; A Study of 282 cases, JIMA,VOL-100,July 2002, page no-420-424.
15. Gordon A, Lipton D, Woodruff J.D : Dysgerminoma : A review of 158 cases from the E mil Novak ovarian tumor registry . Obstet Gynecol 58 : 497-504, 1981.
16. Gupta, S.C., Singh, P.A., Mehrotra, T.N., Agarwal, R. : A Clinicopathological study of ovarian tumors. Indian J. of Pathol. Microbiol, 29 : 354-362, 1986.
17. Hart, W.R., Norris H.J. Borderline and malignant mucinous tumors of the ovary. Cancer 31 : 1031-1045, 1973.
18. Julian, C.G., Woodruff, J.D. The biologic, behavior of low grade papillary serous carcinoma of the ovary obstet. Gynecol, 1972. 40 : 860-867.
19. Misra, R.K., Sharma, S.P., Gupta, U., Gaur, R., Mishra, S.D: Pattern of ovarian neoplasms in eastern U.P; J. Obstet. Gynecol. India : 41: 242-246, 1991.
20. Morris, J.M., Scully, R.E. : Endocrine Pathology of the ovary. St. Lowis, 1958.
21. Mukharjee Chanda. Dasgupta Anjali, Gosh R.N. and Sengupta J.
22. Ovarian tumours – A ten year study.
23. J. Obstet and Gynaec. India, 41: 691 to 692, 1991.
24. Nakashima, N., Young, R.H. Scully, R.E. : Androgenic granulosa cell tumors of the ovary. A Clinico-Pathologic analysis of 17 cases and review f the literature Arch. Pathol. Lab Med. 108 : 786-791, 1986.
25. Norris, H.J. Jensen, R.D.: Relative frequency of ovarian neoplasms in children and adolescents. Cancer 30:713, 1972.
26. Roth, L.M., Gersell, D.J., Ulbright, T.M. Ovarian Brenner tumors and transitional cell cercinoma. Recent developments Int. J.Gynecol. Pathol. 12, 128-133, 1993.
27. Sampson, J.A. Endometrial carcinoma of the ovary arising in endometrial tissue in that organ. Arch. Surg. 10: 1, 1925.
28. Scully R.E.: Ovarian tumors. A review Am. J.Pathol. 87 : 686-720, 1977.
29. Sternberg, W.H., and Dhurandhar, H.N. Functional ovarian tumors of stromal and sex-cord, Hum. Pathol. 8 : 565-582, 1977.
30. Vaiphei: K. Rajwanshi A, Dogra M; profile of malignant ovarian tumours seen at PGI in five years. Bulletin postgraduate institute of Medical education and Research, Chandigarh 1990 Jun, 24(2): 79-85.
31. Young, R.H., Clement, P.B., Scully, R.E., 1988. Calcified thecomas in young women. A report of four cases. Int. J. of Gynecol Pathol. 7 : 343-350, 1988.