



**ORIGINAL RESEARCH PAPER**

**Obstetrics and Gynaecology**

**A CLINICOPATHOLOGICAL ANALYSIS OF ADOLESCENT OVARIAN TUMOURS**

**KEY WORDS:** Adolescent, ovarian tumour

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**ABSTRACT**

Ovarian tumours are infrequently seen in adolescents, but they are the most common genital tumours in this age group. This is a clinical prospective study of adolescent ovarian tumours diagnosed and managed at a tertiary institution over a period of 2 years. Aim was to study the pattern of distribution of ovarian tumours in adolescent age group and analyse the correlation between clinical findings and ultrasound diagnosis with laparotomy findings and histopathological diagnosis. Clinical examination, ultrasonological scoring and intraoperative findings correlated well with histopathologic diagnosis in most cases. 80% of tumours were benign. Majority of tumours were in Stage 1A (84%) and 67% of tumours were of epithelial origin. Majority (>90%) had conservative surgeries thus preserving fertility. Malignant tumours included dysgerminoma, endodermal sinus tumour and malignant teratoma. There was one death which was a case of immature teratoma.

**INTRODUCTION**

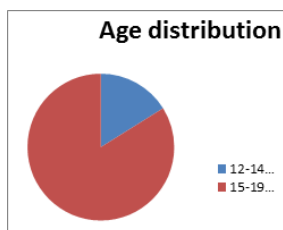
In patients under the age of 20, approximately 60% of ovarian tumours are germ cell tumours. Sex cord stromal tumours account for 0.5-2% and epithelial tumours account for 25% of ovarian tumours. Malignant germ cell tumours exhibit an extremely rapid growth pattern and the most common symptom is abdominal pain and mass. Tumour markers like AFP, HCG, LDH, Inhibin and Ca 125 are extremely useful in the diagnosis, in assessing response to therapy and in monitoring for recurrence. Early diagnosis should be reached by physical examination, imaging, tumour markers and pathological examination and treatment should be individualised.

**MATERIALS AND METHODS**

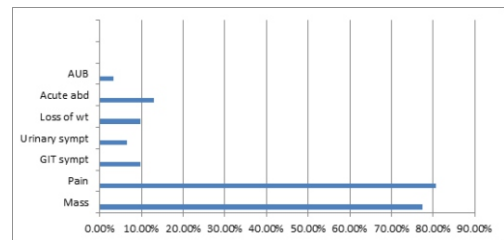
This is a clinical prospective study of adolescent ovarian tumours diagnosed and managed at a teaching hospital in North Malabar over a period of 2 years. All cases of ovarian tumours in the age group less than 19 years were included in this study. Those cases that clinically and sonologically pertained to ovarian tumour, but on surgical intervention turned out to be non neoplastic cysts were excluded from this study. A detailed history and clinical examination followed by ultrasound as well as Doppler evaluation was done for all these patients. Tumour markers and other investigations like CT scan were done in indicated cases. All the cases were followed up at laparotomy to have a comparison with the clinical and ultrasound diagnosis. Histopathology results were studied and correlated with the diagnosis arrived at by their morphological features. Staging was done according to FIGO system. Adjuvant therapy was given based on staging and histopathology.

**RESULTS**

83.87% (26 cases) of patients were in the age group 15-19years, and 5 patients (16.12%) were in the age group 12-14 years. Youngest patient in this series was 12 years old and it was a case of serous cystadenoma. 1 case had precocious menstruation and it was a case of large mucinous cystadenoma. 91.4% had regular cycles.



Clinical symptamatology was as follows. 19.35% was asymptomatic.

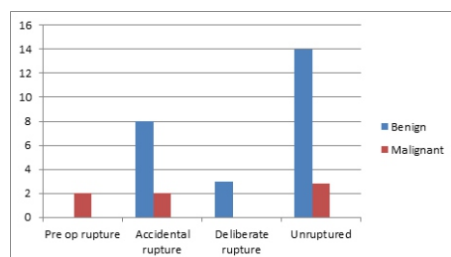


Duration of symptoms were in general less for malignant tumours. Among the 31 cases there were 10 cases associated with pregnancy. Conservative surgeries were done in all these cases.

All 31 cases were subjected to scoring using Sassone and Timor Tritch(1991). In the current study, score more than 9 was taken as cut off to brand the tumour as suspicious of malignancy. Parameters included in scoring were size of tumour, inner wall structure, wall thickness, septal thickness and echogenicity. For prediction of malignancy, Sassone scoring had a sensitivity of 83.3%, specificity of 72%, and positive predictive value of 42.9% and a negative predictive value of 94.7% in the current study. The observations show that a low sonomorphologic score may help to exclude malignancy as it has a high sensitivity and negative predictive value. Doppler evaluation showed 11 cases with increased vascularity. Out of the 11 cases, 5 were malignant. This shows a high specificity and negative predictive value. 12.9% had ascites, 3.2% had hepatomegaly and 6.5% had enlarged para aortic nodes. Tumour markers evaluated were Ca 125, LDH, AFP, CEA and HCG. CA 125 was elevated in 3.2%. LDH was elevated in 3 cases of dysgerminoma and one case of endodermal sinus tumour.

**INTRAOPERATIVE FINDINGS-** Majority of tumours were grossly cystic. There were 6 solid tumours (19.3%) which included 4 cases of dysgerminoma, 1 case of endodermal sinus tumour and 1 case of fibrothecoma. Torsion was present in 22.6% cases. Serous tumours formed 57.14% of cases with torsion.

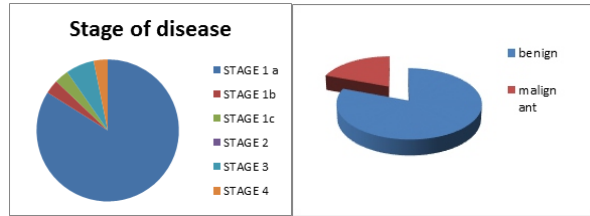
Capsular rupture and association with malignancy is shown below



Peritoneal implants and omental infiltration were present in 9.6% cases. Ascites was present in 5 out of 6 malignancies. The benign tumour which presented with ascites was a case of mucinous cystadenoma. Para aortic lymph nodes were involved in 9.6% cases and all of these were malignant.

Most of the cases were managed by conservative surgeries. A case of stage 4 malignant dermoid who presented with recurrence was managed by debulking surgery. More than 90% was diagnosed in stage 1.

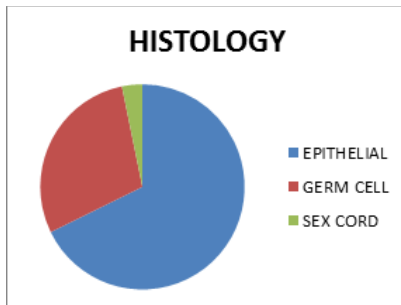
Of the 31 cases, 25 were benign and 6 were malignant



**HISTOPATHOLOGICAL ANALYSIS**

HISTOPATHOLOGY	NO OF CASES	PERCENTAGE
Serous cystadenoma	12	38.7%
Mucinous cystadenoma	9	29.03%
Benign cystic teratoma	3	9.6%
Malignant dermoid	1	3.2%
Dysgerminoma	4	12.9%
Endodermal sinus tumr	1	3.2%
Fibrothecoma	1	3.2%

Out of the 31 cases, 67.4% were epithelial tumours, 29.03% germ cell tumours and 3.22% sex cord stromal tumours.



There were 6 cases of malignant ovarian tumours. The patient with malignant dermoid expired following debulking surgery. All other cases of malignant germ cell tumours were treated with BEP regime at our radiotherapy department. These patients were followed up till end of the study period. These tumours have shown complete response to chemotherapy.

**DISCUSSION**

During the study period, there were 31 cases of ovarian tumours in adolescent age group. Of these tumours, 80.64% were benign and 19.35% were malignant. This is similar to the data from western countries where 75-80% is benign. Also study carried in India by Pilli et al has approximately similar results. Epithelial tumours were the most common histopathological type in the present series accounting for 67.4% of all ovarian tumours, germ cell tumours formed 29.03% and sex cord stromal tumours formed 3.22%. According to western figures, 60% of ovarian tumours in adolescents are germ cell tumours. In the study by Hassan et al, 49.1% were germ cell tumours. Among the epithelial tumours, serous cystadenoma constituted 57.14%, followed by mucinous tumours which formed 42.85%. All epithelial tumours in the study group were benign. Many studies have indicated epithelial ovarian masses in adolescents are more commonly serous than mucinous (study by Norris and Jensen). In the present study, germ cell tumours formed 29.03% of tumours. Out of this, 44.4% were dysgerminoma, 33.3% benign cystic teratoma,

11.1% malignant teratoma and 11.1% endodermal sinus tumour. Similar results were found in the study by Oumachigui et al.

Predominant symptoms with which most of the ovarian tumours presented were pain abdomen and mass abdomen (80.64%). The morphological index using Sassone scoring which was evaluated in this study had a high sensitivity (83.3%) and negative predictive value (94.7%) for malignancy. An advantage of the morphological index is that the interobserver variation in scoring seems to be minimal. Intraoperatively, 25.8% cases were suggestive of malignancy. Out of this 75% turned out to be truly malignant. Thus, there was a good correlation between clinical, ultrasonological and laparotomy findings with histopathological diagnosis. Torsion were present in 22.6% cases. Ehreren et al reported the incidence of torsion in adolescent tumours to be 35.4%. Abdominal position of ovary due to small pelvis in younger age may explain the increased incidence of torsion.

Out of the malignant germ cell tumours, 4 cases were dysgerminoma. Out of the 4 cases, two were stage 1a and one was in stage 1c. Conservative surgery was done for these three cases, followed by postoperative chemotherapy. There was one case of stage 3c dysgerminoma who had a prior history of ovariectomy. She was managed by total abdominal hysterectomy and salpingoovariotomy followed by post operative chemotherapy. Dysgerminoma has the best prognosis among germ cell malignancies because it presents early and is very sensitive to chemotherapy. There was one case of endodermal sinus tumour which was managed by unilateral ovariectomy and postoperative chemotherapy. There was one case of malignant teratoma. She had ovariectomy done 5 years back (a case of immature teratoma). She presented in stage 4 disease with recurrence and debulking surgery was done, but she expired.

All the patients with malignant germ cell tumours were treated with BEP regime. Girhenson and associates and M.D Anderson cancer group has reported complete response to dysgerminomas. In the treatment of non dysgerminomas, Williams and associates have shown a high remission rate of 90%.

To conclude, the diagnosis of ovarian neoplasm in adolescent age group poses a great challenge to the clinicians owing to the need of conservation of reproductive/endocrine and menstrual functions in one hand and the malignant potential on the other. Management especially in germ cell tumours should follow a less aggressive surgical approach. Unilateral salpingoovariotomy and staging leads to excellent survival and reproductive outcomes in younger patients with stage 1a grade 1/2 tumours and unilateral borderline ovarian tumours. Careful follow up of these patients is essential to detect disease progression or recurrence.

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