

# OVARY TUMOURS IN ADOLESCENTS AND YOUNG WOMEN

Mirjana P. Arsenijević<sup>1</sup>, Biljana M. Milicic<sup>2</sup>, Aleksandar Zivanovic<sup>3</sup>, Bozidar J. Jovanovic<sup>3</sup><sup>1</sup>Polyclinic for Students of the Health Center Kragujevac, <sup>2</sup>Faculty of Dentistry, University of Belgrade, <sup>3</sup>Gynecology and Obstetrics Clinic, Clinical Centre Kragujevac, Serbia, Serbia and Montenegro

## TUMORI OVARIJUMA U ADOLESCENTKINJA I MLADIH ŽENA

Mirjana P. Arsenijević<sup>1</sup>, Biljana M. Miličić<sup>2</sup>, Aleksandar Živanović<sup>3</sup>, Božidar J. Jovanović<sup>3</sup><sup>1</sup>Studentska poliklinika Doma zdravlja Kragujevac, <sup>2</sup>Stomatološki fakultet Univerziteta u Beogradu, <sup>3</sup>Ginekološko-akušerska klinika, Klinički centar Kragujevac

Primljen/Received: 28. 06. 2004.

Prihvaćen/Accepted: 26. 10. 2005.

### SAŽETAK

Pojava raznovrsnih tumora ovarijalnog porekla, verovatno je posledica delovanja čitavog niza različitih faktora, koji imaju značajnu ulogu u pojavi, razvoju i klasifikaciji tumora.

U pubertetu i adolescenciji, kao prelaznom periodu iz detinjstva u zrelo doba, pod uticajem hormonske regulacije, socijalne sredine i psihofizičke ravnoteže, najčešće može doći do prekida korelacije pomenutih faktora, a što može da ugrozi reproduktivno zdravlje mladih. Bolesti reproduktivnog sistema tada prvi put postaju značajne.

Zato je značaj i uloga juvenilne ginekologije da preventivno zdravstveno-vaspitnim radom i pravovremenim lečenjem sačuva reproduktivno zdravlje adolescentkinja, jer najčešća oboljenja ovarijuma su u tesnoj vezi sa tumoroznim promenama, koji mogu da utiču na normalnu funkciju ovarijuma.

**Ključne reči:** ovarijum, adolescentkinja, mlade žene, cista, bolna menstruacija

### ABSTRACT

Phenomenon of heterogeneous ovary tumours is probably the result of activity of the whole series of various factors, which play significant role in genesis, development and classification of tumours.

In the age of puberty and adolescence, as a transitional period from childhood to adulthood, it is not rarely seen that due to the influence of hormone regulation, social environment and psychophysical stability, the break of correlation of the mentioned factors can imperil reproductive health of young people. That is the moment when the illnesses of reproductive system become noteworthy for the first time.

Thus the immense role of juvenile gynecology is to preserve reproductive health of adolescent girls by preventive health education. The most frequent illnesses of ovary are in tight connection with ovary tumour changes, which could have influence on the normal function of the ovary.

**Key words:** ovary, adolescent girl, young women, cyst, and dysmenorrhoea.

### INTRODUCTION

Tumour can be defined as „an uncontrolled new growth of tissue“ (Ewing) or as „a local, atypical, autonomous, inappropriate ebullition of tissue“ (Borst). An ovary has the shape of an „almond“ and its dimensions (4x3x1 cm), but each ovary swelling can be named as an ovary tumour according to the preceding definitions. These ovary swellings can appear as cystic formations or real tumours.

According to the International Classification, the ovary tumours are classified into:

- I-Retentive or functional cysts: folliculin cysts, lutein cysts, endometroid cysts and paraovarian cysts.
- II-Real ovary tumours (cistoms): dermoid cysts, serous and mucinous cistadenom.
- III-Solid ovary tumours: Brenner's tumour and ovarian fibroid.
- IV-Functional ovary tumours: feminizing and masculizing tumour.

According to The World Health Organization the ovary cancers are classified into: epithelial, mezenhimal, lipid and germinative cells tumours, gonado-blastoma, unclassified and metastatic tumours. This is the classification made according to histological structure of the tumour. Malignant tumours can be: primary, secondary and metastatic.

The ovary cysts source (origin) can be set according to the place where they can be found and according to the epithelium which covers the interior surface of the cyst. However, in some cases it is difficult to determine the origin of the cyst, because the epithelium mentioned above is missing and the position of the cyst is changed.

There is a strict difference between ovarian cysts and the real tumours. What they have in common is their external form and consistency.

Retentive ovary cysts appear and develop with the secretion of the existing cavity, while the real ovary tumours appear and enlarge by multiplying of cell elements. Retentive cysts are the ones which collect liquid (usually serous) in existing cavities (for example in a follicle). Thereby the serous content of the follicle cavity enlarges, and consequently the cysts from a pea-size to an apple-size are formed. Interior surface of the cyst is smooth and its epithelium consists of one or two rows and can be active and secrete follicule hormone which can cause endocrine impediment.

A great number of ovary cysts give the impression that the ovary is polycystic. In the case of polycystic ovaries, the ovaries are most often both enlarged and moved towards recess of Douglas. Their surface is rough, and ovary capsule is thickened. The other cysts show tumour-like embolition of the ovary tissue, especially epithelial components, but they reach the dimensions of a human head or bigger. They are connected to the ovary with a wide base or thick petiole. Their exterior surface is smooth and sometimes rough since the cysts can go through their wall and appear on the exterior surface with subsequent proliferation of the tissue. These cystic changes are known as cistomis (cistodenoma).

The epithelial tumours belong to the group of more or less mature tumours and the group of cancers.

The malignant ovary tumours appear the moment when the cells start rapid division, when there is no control of multiplication, that is to say, when malignant potential

is created. A general condition of the human organism is out of balance, followed by intoxication, pains and weakness. A primary cancer is malignant from the very beginning, and the secondary tumour comes out of the primary, which has gradually degenerated into malignant one. There can be the cancers of other organs (stomach, intestines) on the ovary, that is to say, metastasis ovary tumours. Ovary tumours of small dimensions do not cause any symptoms. They usually show up in the gynecological examination. Bigger tumours cause pains, the pressure in small pelvis, the impediment of menstrual cycle and painful menstruations. The pressure of the tumour on the urinary bladder causes the disturbances when urinating (difficult, frequent and painful urinating) and the pressure on rectum causes difficulties in it's emptying (constipation). The appearance of edema of lower extremities and the appearance of ascities can be caused by the ovary tumour. Some of the endocrine ovary tumours secrete androgynous hormones which influence the disturbance in hormone balance (hirsutisms, seborrhea, insulin resistance).

The most frequent complications in case of ovary tumours are: pressure on the other organs (impediments in digestive, urinary, respiratory and cardiovascular system), torsion of tumour, infections (abscess), rupture, incarceration and malignant degeneration of the tumour. Retentive cysts most often rupture and disappear after a short time.

In the case of polycystic ovaries a hormone therapy (contraceptive pills) is applied. In the case of real cysts and ovaries tumours, a surgical treatment is applied. In the case of malignant ovary tumours, a surgical is the most often applied treatment, in combination with the x-ray and citostatic therapy.

The aim of our work was to investigate the prevalence and clinical characteristics of the ovary tumours in adolescents and young women.

### PATIENTS AND METHODS

The study includes adolescent girls and young women, which are examined in gynecological medical office of School Health Center and in Student's Polyclinic of Health Center in Kragujevac in the period from March the 1st 2002. to March the 1st 2004. A total number of examined girls are 3065. The ovary tumour is diagnosed in 207 girls.

Adolescent girls and young women addressed to the gynecologist most often due to irregular menstrual cycles, painful menstruations, pains in the lower part of abdomen, hirsutism, juvenile acne, even psychic tension which appeared due to discomforts mentioned above.

Medical history files are used as a source of information (personal, family anamnesis, gynecological status, diagnosis, treatment). Other diagnostic methods (gynecological examination, rectal examination, ultrasound examination) and biochemical analyses of blood (complete blood count, erythrocyte sedimentation rate, urine, glucose in blood, oral glucose tolerance test), hormone analyses and Ca-125 blood marker have also been applied.

The descriptive statistics and hypothesis testing were used in data analysis. The level of significance was established at  $p < 0.05$ .

### RESULTS

The average age of the examined patients included in this study was  $21.83 \pm 1.93$  years (the mean  $\pm$  standard deviation). The frequency of the examined patients in age groups during up to five years interval was: 9.2%, of age 15–19 years, 83.1%, of the age 20–24 years and 7.7% of age 25–29 years (figure 1). According to the frequencies already mentioned, we notice statistically significant frequency of the examined girls and young women of the age of 20–24 years ( $p = 0.000$ ).

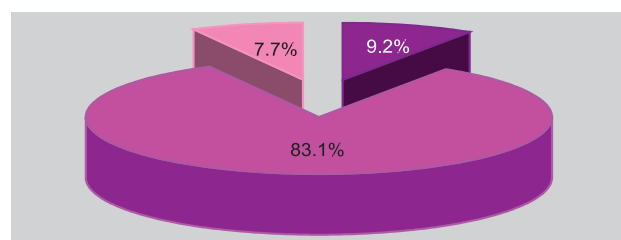


Figure 1. Age groups of study subjects.

The frequency of tumours in the observed group of the examined patients showed statistical difference ( $p = 0.000$ ). The most frequent ovary tumours were: retentive cysts (48.5%) and polycystic ovaries (44.1%), while classical cysts were significantly less present (7.4%) as well as the cancer of ovary, which was noticed with only one examined girl (figure 2).

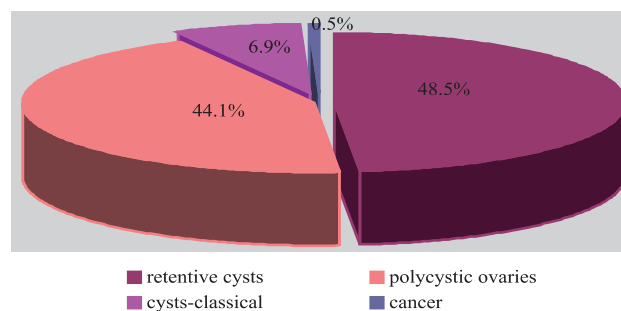


Figure 2. The types of tumors.

In the group with polycystic ovaries, there was statistically the greatest number of girls with polycystic ovaries on both sides (58.9%), 22.2% of the examined patients had a left polycystic ovary, 12.2% of tested subjects had a right polycystic ovary and 6.7% had polycystic ovary and a cyst (figure 3).

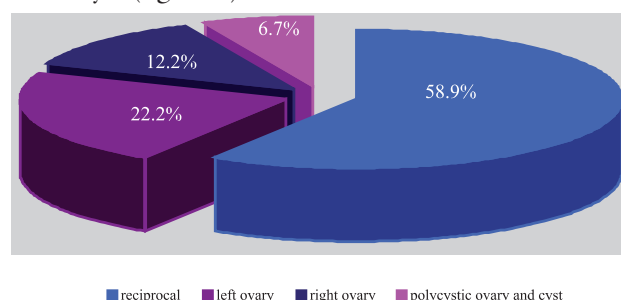


Figure 3. Cyst localisations.

In the examined group, only one patient (0.5%) had no symptoms, while in the case of the other the examined patients the number of symptoms ranged between one and seven because of the tumour of ovary. The examined patients with three symptoms were the most numerous (29%), 21.3% of the girls had two symptoms, 18.4% of them had four symptoms, 12.1% of the patients had five symptoms, 11.1% had one symptom, 5.3% of the examined girls had six symptoms and 2.4% of patients had seven symptoms (figure 4).

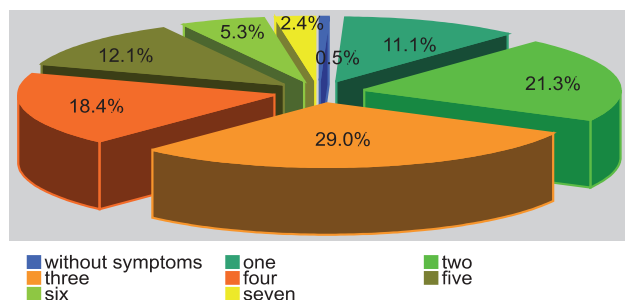


Figure 4. The frequency of the clinical signs and symptoms.

The frequency of the appearance of certain symptoms in the examined population with the tumours of ovaries was as follows: pain was present in 46.4% of girls, painful menstruations were the most usual symptom and they were present in 59.4% of the examined patients, amenorrhea in 12.6%, intramenstrual bleeding in 9.2%, hirsutisms was present in 30% of the examined girls, 11.6% of the examined patient had juvenile acne, 13% of the examined girls were obese, edema was present in 1.4% of the examined patients. The growth of abdomen was present in 9.2% of the examined patients, 5.8% of the patients had the problem with urinating, 5.3% had problem with defecation, while 43% of the examined girls complained about a psychic tension.

The greatest number of the examined patients, 27.1% had three or four applied diagnostic methods for diagnosing the tumour of ovary, 22.7% had two diagnostic methods, 9.7% had one method, 6.8% had five methods, 5.3% had six methods and 1.4% had seven methods. Among all patients, 39.1% had a rectal examination, 62.3% gynecological examination, 67.1% an ultrasound, 35.5% hormone analyses, 16.9% tumour markers (Ca-125 marker), 66.5% biochemical analyses, 9.7% oral glucose tolerance test and 22.7% of patients had glucose in blood examined (figure 5).

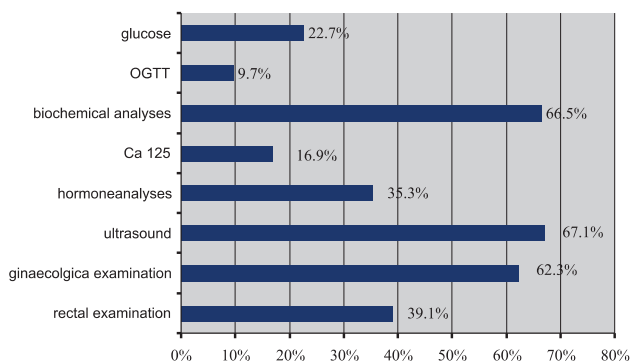


Figure 5. Biochemical parameters and diagnostics performed in study subjects.

Hormonal therapy was the most often used kind of therapy in the group of the examined patients with the tumour of ovary (p=0.000). The hormone therapy was instituted in 47.9% patients, 39.9% had a spontaneous treatment of the cyst of ovary, 9.8% of the patients underwent an operative treatment and 1.8% had both hormone and operative treatment (figure 6).

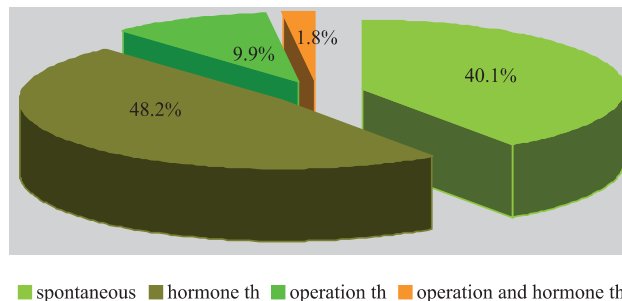


Figure 6. The treatment modalities.

Pathohistological analyses, in the case of patients with operative treatment, showed the existence of malignant tumour of ovary in only one patient (0.5%), while fifteen (7.2%) patients had a benign change on their ovaries. The most present patients (53.3%) of all examined girls with benign cysts were the ones with serous cysts, 26.7% of the patients had mucinous cysts and 20% of the patients had dermoid cysts (figure 7).

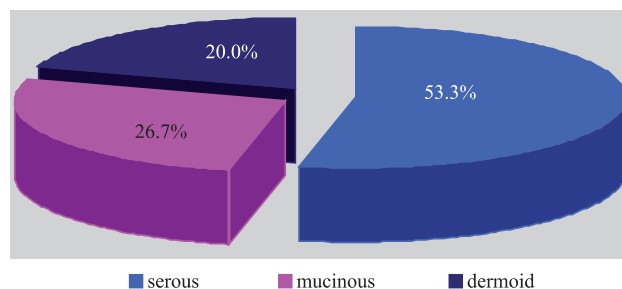


Figure 7. The pathological findings.

The details of study variables are presented in the table 1.

Table 1. Examined characteristics and their presence in examined group of patients.

VARIABLES		Number (%)	
Age groups n (%)	15-19	19 (9.2%)	
	20-24	172 (83.1%)	
	25-29	16 (7.7%)	
Place of living	Kragujevac	155 (74.9%)	
	Out of Kragujevac	52 (25.1%)	
Environment	Rural	21 (10.1%)	
	Urban	186 (89.9%)	
Type of tumour	Retentive cysts	99 (47.8%)	
	Polycystic ovaries	Reciprocal	53 (25.6%)
		Left ovary	20 (9.7%)
		Right ovary	11 (5.3%)
		Polycystic ovary and cyst	6 (2.9%)
	Cysts-classical	14 (6.8%)	
	Cancer	1 (0.5%)	

VARIABLES		Number (%)	
Diagnostics	Cynecological examination	129 (62.3%)	
	Rectal examination	81 (39.1%)	
	Ultrasound examination	139 (67.1%)	
	Hormone analyses	73 (35.3%)	
	Ca 125 marker	35 (16.9%)	
	Blood picture and biochemistry	137 (66.2%)	
	OGTT	20 (9.7%)	
Symptoms and signs	Glucose in blood	47 (22.7%)	
	Pain	96 (46.4%)	
	Dismenorrhea	123 (59.4%)	
	Amenorrhea	101 (48.8%)	
	Oligomenorrhea	57 (27.5%)	
	Polymenorrhea	26 (12.6%)	
	Intramenstrual bleeding	19 (9.2%)	
	Hirsutismus	62 (30%)	
	Acne juveniles	24 (11.6%)	
	Obesity	27 (13%)	
	Edema	3 (1.4%)	
	Abdominal distension	19 (9.2%)	
	Problems of urinating	12 (5.8%)	
	The problems with defecation	11 (5.3%)	
Therapy	Anxiety	89 (43%)	
	None	65 (31.4%)	
	Drug	Oral contraceptive	71 (34.3%)
		Metformin	6 (2.9%)
	Surgery	16 (7.7%)	
Drugs and surgery	3 (1.4%)		
Pathological findings of benign changes	Serous cysts	8 (3.9%)	
	Mucinous cysts	4 (1.9%)	
	Dermoid cysts	3 (1.4%)	

**DISCUSSION**

In two year period, 3065 adolescent girls were examined by a gynecologist of the School Dispensary of Health Center and Students polyclinic. In case of 207 examined patients, an ovary tumour was diagnosed. The girls of age 20–24 years were the most numerous. We were expecting that this age group would be the most frequent because the girls of that age most often come to the gynecological examination for the first time. Many of them have already had the first sexual intercourse and many of them come because of discomforts which have appeared because of irregular menstrual cycles.

Most patents showed anxiety and fear of the first visit to the gynecologist and of being nude during the examinations. Many of them were embarrassed because of increased weight, hirsutisms and acne on their face.

From personal anamnesis we could discover what were the main ailments that forced girls come to gynecologist. There were painful menstruations or impediments in menstrual cycle. Stress, as a result of their way of life, was present in many of them. We also found out from family anamnesis, that a genetic factor was present in ethiopathogenesis of ovarian tumours in certain adolescent girls.

During the first examination we succeeded in dispelling girls fear of the examination and we placed trust in them which was the most important thing. Sexually active girls were examined gynecologically and the girls not sexually active were examined rectally. It was suggested that beside these examinations a few more examina-

tions should be taken so that the diagnosis would be more precise (ultrasound, hormone analyses of blood, Ca-125 marker, biochemical analyses, glucose in blood, oral glucose tolerance test). Some girls gave up further clinic exmination, because of financial causes and they had to pay for some analyses.

Using different diagnostic methods, we found that functional retentive cysts were the most present. These cysts caused the absence of menstruation. The menstruation absence caused fear of possible unexpected pregnancy or some hormonal impediment. Functional cysts were also examined in the following period and we could notice that many of them disappeared spontaneously which was found in other studies, too (1).

In this study one of the possible treatments of functional cysts was operation. However, in the case of our tested girls, five girls were hospitalized because of strong pains caused by bursting of functional cysts, but none was operated on. Appropriate symptomatic therapy was ordinated. In five examined girls it was found, during the ultrasound examination, that the functional cysts were united with polycystic ovaries. Here it came to a spontaneous bursting of the cysts, but the contraceptive therapy was suggested because of prevention and treatment of polycystic ovaries.

Polycystic ovaries, which were very often reciprocal, were found in many girls. During ultrasound examination in the second phase of menstrual cycle we found vertical enlargement of the ovary with numerous small sub capsule cysts, size of 2–6 mm in a shape of a pea. The main discomforts in these girls were painful menstruations, menstruations that came every two or three months, then obesity, hirsutisms and acne on their face.

In order to make diagnostic difference between polycystic ovaries and syndrome of polycystic ovaries, we established cooperation with endocrinologist (2). The syndrome of polycystic ovaries is found in 45 patients according to blood hormone analyses (3). Oligo-menorrhea was present in 57 girls, obesity in 27 girls, hirsutisms in 62 girls and 24 patients had acne on their face (5). This appearance was a psychic burden for the girls which we saw and felt during taking anamnesis. This influenced a general life quality of these girls. Other studies examined this problem, too (5). Impediment of glucose in blood was found in six girls and this was in tight connection with insulin resistance of the examined girls. A hormone therapy, i. e. contraceptive pills (pills Diane 35) was used in the case of girls with polycystic ovaries and syndrome of polycystic ovaries (5, 6).

It has been mentioned that the same therapy was ordinated in other studies, too (8, 9). In cases of subjects with insulin resistance the therapy of choice was metformin. One girl was operated and the cyst was removed and then she was given a contraceptive therapy (10).

Real (classic) cysts were found at the very beginning by gynecological or rectal examination was done. Analysis of Ca-125 marker in blood is about biological potential of the cysts (11). An operation was appropriate solution for saving the ovary and prevention of secondary

complications, which may appear in ovarian cysts (12). Pathohistological analyses, in case of the girls who had operative treatment, showed the existence of serous, mucinous and dermoid cysts (13). The examined girls had following symptoms: pains and pressure in a lower part of abdomen, swelling of abdomen, irregular menstrual cycle, difficult urinating and problems with defecation. A malignant tumour of ovary was found in one patient, 20 years old. When she entered in gynecological medical office her appearance pointed to the possibility of the

malignancy of ovary (weakness, pointed nose and „frog“ abdomen). During the rectal examination a tumour change, that filled the whole of little pelvis, was found. The girl was operated on. Fortunately, it was confirmed by PH analysis that the tumour was on the verge of malignity. It is considered that possible factor of risk was the stress that she experienced in puberty while living in war areas. We can also find malign ovary tumours in other author's studies (13).

## REFERENCES

1. Doret M, Raudrant D. Functional ovarian cysts and the need to remove them. *Eur J Obst Gynecol Reprod Biol* 2001; 100: 1-4.
2. Kent Sarah C, Largo Richard S. Polycystic ovary syndrome in adolescents. *Adolescent Med* 2002; 13: 73-88.
3. Campbell J M, Porier BW. Polycystic ovary syndrome: a case presentation. *Clin Excell Nurse Pract* 2000; 4: 341-4.
4. Falsetti L, Gambera A, Andrico S. Acne and hirsutism in polycystic ovary syndrome: clinical, endocrine, metabolic and ultrasonographic differences. *Gynecol Endocrinol* 2002; 16: 275-84.
5. Trent ME, Rich MS, Austin BS. Quality of life in adolescent girls with polycystic ovary syndrome. *Arch Pediatr Adolesc Med* 2002; 156: 556-60.
6. Creatsas G, Koliopoulos C, Mastorakos G. Combined oral contraceptive treatment of adolescent girls with polycystic ovary syndrome. *Ann NY Acad Sci* 2001; 900: 245-52.
7. Tratagni M, Schonaver L M, DeSilvia MA. Comparison of Diane 35 and Diane 35 plus finasteride in the treatment of hirsutism. *Fertil Steril* 2002; 73: 718-23.
8. Arslanin SA, Levy V, Danadian K. Metformin therapy in obstetric adolescent with polycystic ovary syndrome and impaired glucose tolerance: amelioration of exaggerated adrenal response to adrenocorticotropin with reduction of insulinemia/insulinresistance. *J Clin Endocrinol Metab* 2002; 87.
9. Glueck CJ, Wang P, Fontaine R, Tracy T, Sieve SL. Metformin to restore normal menses in oligo-amenorrheic teenage girls with polycystic ovary syndrome. *J Adolesc Health* 2001; 29: 160-9.
10. Stricland JL. Ovarian cysts in neonates, children and adolescents. *Curr Opin Obstet Gynecol* 2002; 14: 459-65.
11. Gotljeb WH, Sorino D, Achiron R, Zalez V. Ca-125 measurement and ultra sonography in borderline tumours of the ovary. *Am J Obstet Gynecol* 2002; 183: 541-6.
12. Lorie S, Golan A, Glezerman M. Adnexal torsion with paraovarian cyst in a teenage girl. *J Am Assoc Gynecol Laparosc* 2001; 8: 597-9.
13. Tsai JY, Saigo PE, Brown C, La-Quaglia MP. Daignosis, pathology, staging, treatment, and outcome of epithelial ovarian neoplasia in patients age L 21 years. *Cancer* 2001; 91: 2065-70.