Original article

UDC: 618.11-006-073
doi:10.5633/amm.2018.0111

THE ROLE OF ULTRASONOGRAPHY IN DIFFERENTIATING BETWEEN BENIGN AND MALIGNANT OVARIAN TUMORS IN POSTMENOPAUSAL WOMEN

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Malignant ovarian tumors occur at all ages, with the total incidence dramatically increasing with age. Ovarian cancer survival rate depends on the stage at which the disease is detected.

The aim of this study was to determine sensitivity, specificity and predictive values of the tests for pre-operative monitoring of the state of ovarian tumors in postmenopausal women and to assess possible malignant potential and examine the correlation of clinical finding and significance of ultrasonography in differentiating benign from malignant ovarian tumors.

The research is defined by the models of prospective-retrospective study, involving 60 postmenopausal women diagnosed with ovarian tumors.

The following medical tests and examinations were performed for all patients: anamnestic analysis of the medical records (history of the disease with the data on age, parity, duration of menopause, use of oral contraceptives, symptoms, and small pelvis sonography).

There is an age difference between the women with benign ovarian tumors and those with malignant ones. Women with benign tumors had 1.96 children on the average, compared to the average of 1.40 children of women with malignant ovarian tumors. Duration of oral contraceptive use in women with benign changes was 2.84 years on the average and 1.27 years was the average of women with a malignant process, showing a high statistical significance of 5%. Among the subjects with benign tumors, the dominant tumor structure was cystic, as opposed to mixed-type tumors in those with malignancies. Tumor location is, with a high statistical significance, more often bilateral in subjects with histopathologically confirmed malignant tumors, while it is predominantly unilateral in benign tumors. Tumor size is a reliable factor in differentiating benign from malignant ovarian tumors. The wall thickness of benign tumors is higher in relation to that in malignant ones. The presence of free fluid in the pouch of Douglas is rare in benign ovarian tumors, while it is quite frequent in malignant ones.

Acta Medica Medianae 2018;57(1):70-79.

Key words: *ultrasonography, ovarian tumors, postmenopausal*

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Introduction

In the last few decades, the incidence of morbidity and mortality from malignant ovarian tumors is constantly on the rise. Therefore, they represent a constant challenge for gynecologists-clinicians. To date, the true reason for this phenomenon has not been clarified. Ovarian carcinoma makes 5% of all malignant tumors in women. Although ovarian cancer accounts for 23% of all gynecologic cancers, 47% of all deaths due to malignancy of genital organs were caused by ovarian cancer (1). The data from Western Europe, the U.S. and Canada, indicate a high inci dence, with 10-15 out of 100.000 women being affected (2). The total incidence rate for Europe is 13,4 women out of 100.000. The incidence of this malignancy in our country is between 9,1 and 11,3/100.000 women and there has been an unbroken increasing trend (3).

Malignant ovarian cancers occur at all ages, including early childhood, but also in advanced old age, with the total incidence dramatically increasing with age. The risk of developing ovarian cancer increases after the age of 40, with the incidence peak between 50-55 years. Ovarian cancer is in the fifth place, immediately after breast, lung, rectosigmoid colon and lymphoma cancers, with the highest mortality rate among all gynecological cancers (4,5).

The survival rate for ovarian cancer depends on the stage of the disease at detection. In this respect, the survival rate is 93% in stage I, 70% in stage II, 37% in stage III and 20% in stage IV. Three-quarters of newly discovered ovarian cancers are in stage III and IV, where the five-year survival rate is below 50%. This suggests the importance of early detection and timely treatment of ovarian cancer.

The development of ovarian cancers is influenced by many factors. Hereditary, environmental factors, prior pregnancies, breast feeding, oral contraceptives, infertility, substitution hormone therapy, oncogenic viruses, etc. should be mentioned in this regard.

Hereditary factors have a major impact on the development of ovarian cancer. Although in recent years much has been written about prophylactic oophorectomy, Chen et al. reported that in women with familial history of ovarian cancer, three years after prophylactic oophorectomy, intraabdominal carcinomatosis has occurred (6). Regardless of this phenomenon, for women with a family history of ovarian cancer who have completed their reproductive function prophylactic oophorectomy represents the recommended therapeutic approach (7, 8).

Pregnancy has been proven to have a protective effect, i.e. it prevents the development of malignant ovarian tumors. The study of the patients with these tumors confirmed that they had fewer pregnancies and childbirths, they were older at the time of first gravidity, and they had a greater incidence of spontaneous abortions than the healthy women used as controls. This claim was confirmed by joint studies of Whittemore and associates in America and in Europe, as well as by the studies in Canada and Sweden (9).

Many studies indicate the protective effect of breastfeeding. It is believed that this protective effect works by way of ovulation suppression. Whittemore and associates estimate that with each month of breastfeeding, the risk is reduced by 1% (9).

Infertility can be one of the significant risk factors for the development of ovarian cancer. This is explained by an increased exposure to drugs which stimulate ovulation.

Combined oral contraceptives reduce the risk of ovarian cancer. This protective effect is the strongest finding in all epidemiological studies of epithelial ovarian cancer. The risk is reduced proportionally to the duration of oral contraceptive use. A reduction in the risk of ovarian cancer is estimated to be 11% for each year of use, and 46% after 5 years of oral contraceptive use. The protective effect lasts for 10 years after taking oral contraceptives (1, 10).

There are many opinions about the effect of hormonal substitution therapy. Some studies show a reduction in risk; other studies do not show that the use of supstitution therapy affects the occurrence and activity of ovarian tumors in postmenopausal women [23].

Recently conducted epidemiological studies indicate that environmental factors have a major impact on the appearance of ovarian tumors. Ovarian cancers more often occur in women living in highly industrialized countries (for example, the incidence in Jewish women who live in Israel and the U.S.A. is 14.3/100.000, while the incidence in Jewish women living in underdeveloped countries in Africa is significantly lower) (9) .

Based on this, it can be concluded that many factors affect the occurrence of ovarian cancer, so etiopathogenesis is very complex and there is a number of theories concerning the issue.

The information obtained by ultrasound examination should be used to decide on the need and type of surgical procedure. In general, the presence of a mass greater than 50 mm containing an irregular solid component or the presence of free fluid at a significant amount (over 20 ml) requires surgical treatment. On the other hand, masses that are cystic and less than 40-50 mm can be sonographically monitored for several months in order to document changes in the size of the cyst. Ultrasound can diagnose three large groups of tumors of the ovary: cystic, solid, and mixed-type with the predominance of one or another type of tissue.

In order to improve the prognosis of ovarian cancer, an emphasis is placed on early detection. In the past 20 years, various methods for the detection of ovarian cancer (Papanicolaou smear, peritoneal cytology examination, etc.) have been applied, but have not proved to be good enough. The latest methods of immunoscintigraphy, nuclear magnetic resonance and computed tomography can reveal small cancers, but their invasiveness and price prevent them from becoming the mainstay of screening for ovarian cancer. The methods studied today as screening methods are bimanual gynecological examination, ultrasound, and tumor markers.

Bimanual examination has the following advantages: it is relatively easy, it can be incorportated into the already existing cervical screening programs, and it does not require special equipment, so it is not costly. However, neither the sensitivity nor the specificity of this test has been known so far.

The majority of studies studying the value of ultrasound in the diagnosis of ovarian tumors used women with symptoms who were about to undergo laparotomy for suspicious ovarian masses. They confirmed the concurrence between ultrasonography and operative findings regarding the size, position and characteristics of the ovarian tumor. Many researchers have tried to use ultrasound to characterize benign and malignant tumors. However, a criterion with 100% specificity for malignant ovarian tumors has not been described so far. With all this in mind, Sasona and associates published a study in 1991 presenting a scoring system for an objective description of pelvic disease based on transvaginal ultranosographic characterization of the change (11). The proposed scoring system used both for ovaries and extrauterine pelvic masses of unknown origin is based on the following four criteria: structure of the interior tumor wall (1-4 points), thickness of the tumor wall (1-3 points), presence and thickness of septa (1-3 points), echogenicity (1-5 points). In

order to obtain a scoring threshold that best separates malignant ovaries from the rest, the sensitivity and specificity for each score from 5-13 is calculated, based on which a curve is formed, the shape of which shows that the total score of 9 points best distinguishes between benign and malignant lesions.

Tumor markers, proteins produced by certain ovarian tumors, are used in the examination of ovarian tumors. Primarily, serum levels of alpha-fetoprotein markers (AFP), CA 125, lactate dehydrogenase (LDH), CEA, and inhibin B are monitored. If there is a suspicion that the tumor is hormonally active and produces certain hormones, appropriate hormone analyses are performed and they serve as tumor markers. The most common are β HCG, estradiol and testosterone. In addition, tumor markers are used to monitor the effect of therapy, as well as for early detection of relapse of certain ovarian tumors (12).

CA 125 is an antigenic determinant of high molecular weight glycoprotein recognized by the monoclonal antibody OC125. CA 125 is a highly sensitive, but not specific marker for tumors of ovarian epithelial cells. It may have elevated values in many intraperitoneal processes such as endometriosis, pregnancy, small pelvis inflammatory disease, Crohn's disease or other malignant abdominal tumors.

Ca 125 antigen may be detected in serum using radioimmunoassay, and serum levels are higher than 35 ml/U in over 80% of women with ovarian cancer (12). Bast and associates (6) also showed that only 1% of healthy women had serum Ca 125 levels higher than 35 ml/U (13). Elevated levels may, however, be related to a benign gynecological pathology. However, the incidence of these benign conditions in postmenopausal women, the group that is most at risk for developing ovarian cancer, is low. However, a more detailed analysis shows a dependence on the stage of the disease. The disease spread outside the ovary is associated with elevated levels of CA 125 in the serum in over 90% of cases. If the tumor is restricted to ovarian tissue, CA 125 levels in the serum are increased in only 50% of cases (13).

Given that a high degree of specificity is required for a prospective screening program for ovarian cancer and given the association between CA 125 and non-malignant pathology, the positive predictive value of elevated serum CA 125 for this disease is considered to be too small for CA 125 to be used as a sole screening test. The specificity could be sufficient if CA 125 is combined with ultrasonography. Such a screening program has been used in large centers worldwide, including the Royal London Hospital since 1985 (13).

The Aim of the studies

The aim of this study was to determine sensitivity, specificity and predictive values of the tests for pre-operative monitoring of the state of ovarian tumors in postmenopausal women and to assess possible malignant potential and examine the correlation of clinical findings and the significance of ultrasonography in differentiating between benign and malignant ovarian tumors.

Material and methods

The study was based on the prospective-retrospective study models involving 60 postmenopausal women diagnosed with ovarian tumors.

The study was carried out in the following institutions: Clinic of Gynecology and Obstetrics, Clinical Center Niš, Women's Health Service of the Health Center Niš, Clinic of Gynecology and Obstetrics of the Clinical Center Kragujevac and Clinic of Gynecology and Obstetrics „Narodni front" from Belgrade.

Results

The study was conducted on 60 subjects, with the youngest being 45 and the oldest 66 years old. The average age was 52.17 years in the group of women with benign ovarian tumors, and 54.13 years in the category of women with malignant tumors (Tables 1 and 2).

Table 1. Total number of subject by age

Age	Benign tumors	Malignant tumors
< 45	0	0
46 - 50	16	3
51 - 55	18	6
56 - 60	7	3
60 >	4	3
∑	45	15

Table 2. Average age of subjects in the categories of benign and malignant tumors with standard deviations in both categories

	$\overline{X}$	**SD**	**Σ**
Benign	52.17	± 7.4	45
Malignant	54.13	± 6.39	15

T test = 0.91, P = 0.366 (no statistical significance), df = 58

The average duration of postmenopausal amenorrhea in the category of women with benign ovarian tumors was 4.4 years, compared to 5.87 years in the group of subjects with malignant tumors, which did not show a statistical significance at the level of 3%, as shown in Tables 3 and 4.

Table 3. Duration of amenorrhea in examined women.

Duration of amenorrhea	**Benign tumors**	**Malignant tumors**
< 1	1	0
1-2	15	4
3-4	9	3
5-6	6	2
6 >	4	6
Σ	45	15

Table 4. Average duration of amenorrhea in the categories of benign and malignant tumors with standard deviations in both categories

	$\overline{X}$	**SD**	**Σ**
Benign	4.4	± 3.9	45
Malignant	5.87	± 4.94	15

T test = -1.2; P = 0.234 – no statistical significance, df = 58

In the group of examined women with benign tumors of the ovaries, the average number of births was 1.96, while women in the group of subjects with malignant tumors averaged 1.4 children. Although the difference in the number of births is evident, it does not have a statistical significance at the level of 3%, as shown in Tables 5 and 6.

Table 5. Number of childbirths of the examined women

Number of childbirths	**Benign tumors**	**Malignant tumors**
0	3	4
1	12	4
2	18	4
3	7	3
3 >	5	0
Σ	45	15

Table 6. Average number of childbirths in the categories of benign and malignant tumors with standard deviations in both categories.

	$\overline{X}$	SD	Σ
Benign	1.96	± 1.11	45
Malignant	1.4	± 1.12	15

T test = 1.66; p = 0.102, df = 24

The use of oral contraceptives is more common in the category of women with benign ovarian tumors compared to women with malignant tumors of the ovary. The length of oral contraceptive use in the category of women with benign tumors of the ovary was 2.84 years, compared to 1.27 years in the group of women with malignant tumors, as shown in Tables 7 and 8. A high statistical significance (p = 0.046) was determined based on the duration of OC use.

Table 7. Duration of use of oral contraceptives (in years)

Duration of OC use	Benign tumors	Malignant tumors
0	18	8
< 1	2	1
1 - 2	2	4
3 – 4	4	2
5	11	0
6 >	8	0
Σ	45	15

T test = 2.03; p = 0.046, statistical significance 5%, df = 58

Table 8. Average duration of use of oral contraceptives in the categories of benign and malignant tumors with standard deviations in both categories

	$\overline{X}$	SD	Σ
Benign	2.84	± 2.80	45
Malignant	1.27	± 1.79	15

T test = 2.03; p = 0.046, statistical significance 5%, df = 58

Benign tumors were predominantly of cystic structure in the examined groups of women, in contrast to the mixed-content structure of malignant tumors, which showed the highest degree of statistical significance, as shown in Tables 9 and 10.

Table 9. Number of benign and malignant tumors differentiated by structure

Tumor structure	Benign tumors	Malignant tumors
Cystic	38	5
Solid	2	2
Mixed-type	5	8
Σ	45	15

Table 10. Correlation of cystic tumor structure to the mixed-type structure

	$\overline{X}$	SD	Σ
Benign	1.96	± 1.11	45
Malignant	1.4	± 1.12	15

$x^2 = 16.1$, $p > 0.001$ – high statistical significance, df = 1

Tumor location was predominantly bilateral in cases with malignant tumors, while in cases with malignant tumors it was unilateral resulting in high statistical significance, as shown in Table 11.

Table 11. Correlation of the location of benign to malignant tumors with standard deviations in both categories

	$\overline{X}$	SD	Σ
Benign	4.4	1	45
Malignant	2	13	15

$x^2 \rightarrow \infty$; $p > 0.001$ – high significance, df = 1

The size of benign tumors was 7 cm on the average, while malignant tumors in the examined group of patients were over 9 cm, which was highly statistically significant, as shown in Tables 12 and 13.

Table 12. Size of the tumor process in the examined group of women

Tumor size in cm	Benign tumors	Malignant tumors
< 3 cm	0	0
4 – 5	8	0
6 – 7	23	2
8 – 9	7	5
> 10	7	8
Σ	45	15

Table 13. Correlation of the size of benign to malignant tumors with standard deviations in both categories

	$\overline{X}$	SD	Σ
Benign	6.96	± 3.11	45
Malignant	9.04	± 4.12	15

T test = -2.8: p= 0.006 – high statistical significance, df = 58

The wall was significantly thicker in benign changes in 39 subjects and it amounted to 3 and more millimeters. In contrast, in malignant tumors, the thickness of the tumor wall in 13 out of 15 su-

bjects was 2 and below 2 mm, which was highly statistically significant. These parameters are given in Table 14.

Table 14. Correlation of the thickness of the wall of benign to malignant tumors with standard deviations in both categories

	≤ 2 mm	≥ 3 mm	Σ
Benign	6	39	45
Malignant	13	2	15

$x^2 = \rightarrow\infty$; $p < 0.001$ – high statistical significance, df = 1

There were significant differences in the appearance of the tumor wall. While in benign ovarian tumors the interior of the wall was smooth, in malignant tumors the interior of the walls was uneven and with numerous excrescences, as shown in Table 15.

Table 15. Correlations of the structure of the wall of benign to malignant tumors with standard deviations in both categories

	Smooth	Uneven	Σ
Benign	40	5	45
Malignant	7	8	15

$x^2 = 11.8$, $p < 0.001$ – high statistical significance, df = 1

In benign ovarian tumors, a sporadic presence of free fluid was found in the pouch of Douglas, whereby the quantity was small, regularly below 50 ml. In malignant tumors, the presence of fluid in the pouch of Douglas is twice as frequent as its absence. In this sense, the finding of a larger quantity of 50 ml of free fluid is statistically highly significant and indicates the presence of a malignant tumor of the ovary. These data are shown in Table 16.

Table 16. Correlation of the presence of free fluid in the pouch of Douglas of the benign to malignant tumors with standard deviations in both categories

	No	Yes	Σ
Benign	40	5	45
Malignant	5	10	15

Discussion

The largest number of examined women was in the age group between 51 and 55 years. The average age of those with benign changes in the ovaries was 52.17 years, while the value for those with malignancies was 54.13. In this respect, this study did not confirm the significant role of age in distinguishing between benign from malignant tumors, nor did it confirm the results of studies of certain authors about malignant ovarian tumors occurring in younger women.

The duration of postmenopausal amenorrhea and the development of ovarian cancer is one of the most studied associations. Numerous studies have not produced any concrete and clear conclusions. The analyses conducted in Europe (14) indicate an increase in malignant potential with the duration of amenorrhea, while in Asian case-control studies (15, 16), as well as in America (17), this type of connection was not established. In addition, the results speaking in favor of the substitution therapy and the length of menopause not being the factors that affect the development and activity of ovarian tu-

mors in postmenopausal women (2,3) were presented. In the examined groups of women, the average length of amenorrhea was 4.4 years in those with benign alterations, compared to 5.87 years in women with malignant ovarian tumors. Based on this, the examinations did not establish close connection between the length of postmenopausal amenorrhea in distinguishing benign from malignant tumors of the ovary.

The examined group of patients differed by the number of childbirths. This ratio was 2:1.4 in favor of those with benign ovarian changes, but statistical significance was not established. However, the results of meta-analyses and case-control studies conducted both in Europe and in America point to the protective effect of childbirth. Thus, a linear increase in a protective effect of childbirth was demonstrated to be proportional to the number of childbirths (17, 18).

Back in 1992, the researchers from Harvard University analyzed the relationship between the use of oral contraceptive and ovarian tumors in 20 studies. The conclusions were that the risk of ovarian cancer was reduced with the length of oral contraceptive use. The results show 10-12% reduction of risk after only one year of use and about 50% reduction after 5 years of continuous use of oral contraceptives (19). Burkman and associates showed similar results: the use of oral contraceptives for 15 years and more reduces the risk of developing ovarian cancer by 58%; 10-14 years by 44%; 5-9 years by 36%; and for 1-4 years the risk was reduced by 22% (19). One of the studies in the Harvard Analysis of „Cancer and Steroid Hormones" (CASH) showed that the reduction of cancer prevalence was the same regardless of the type or concentration of estrogen, i.e. progestin in the tablet (20). In the examined population of women with benign changes, the length of oral contraceptive use was 3 years, while that length in the group with malignant changes was 1.2 years. The statistical significance was present at the level of 5% and corresponded to the results of most of the worldwide studies.

In ultrasound diagnosis and the estimation of malignant potential of ovarian tumors, many scoring systems were made that have not been broadly used in clinical practice (20, 21). However, all the data suggest that the tumor location in malignant processes is most often bilateral, in contrast to the predominant unilaterality in benign conditions. That assumption was proven in the presented study. In addition, the size of benign tumors reaches a little less than 70 mm, while the malignant tumors in the examined group of patients are over 90 mm.

Benign ovarian tumors are primarily cystic in structure, in contrast to the mixed-type structure of malignant tumors.

The thickness of the ovarian tumor wall is considerably higher in benign tumors, which speaks in favor of their cystic and clearly limited structure. There are also significant differences in the appearance of the wall of tumor changes. While the interior of the wall is smooth in benign tumors, it is uneven and with numerous excrescences in malignant tumors. Papillary projections constitute a significant ultrasound sign of a malignancy. The degree of malignancy is proportional to the number of these papillary formations (22). Granberg et al. showed that the risk of malignancy is 3-6 times higher in unilateral cysts with papillary formations compared to unilateral cysts without these formations, which makes the conservative tracking of these cysts unacceptable (22).

As an addition to the ultrasonographic morphological image of the tumor, other factors such as family history, presence of free fluid in the pouch of Douglas and presence of subjective symptoms should be taken into account when deciding on the optimal treatment. When it came to benign alterations in the conducted study, the presence of free fluid in the pouch of Douglas was sporadically seen, while in malignant ovarian conditions this was one of almost regular clinical and ultrasound findings.

Differentiation between benign and malignant ovarian tumors is most important both for the patient and the physician. In most institutions, surgical procedure (laparoscopy or laparotomy) depends on the assessment of the malignant change, but the malignancy can only be excluded with certainty by histopathological confirmation (23, 24). Therefore, many prognostic models for the differentiation of malignant and non-malignant ovarian tumors, including Doppler criteria, have been published so far and show significant validity.

Conclusion

There is an age difference between women with benign ovarian tumors and those with malignancies. Malignant tumors occurred 1.96 years later compared to benign ones. This age difference had no statistical significance. In women with benign tumors of the ovary, a shorter duration of postmenopausal amenorrhea was observed, with a difference of 1.47 years compared to women with malignant tumors of the ovary. However, such a difference in age did not have statistical significance in distinguishing benign from malignant tumors.

Women with benign tumors averaged 1.96 children, compared to 1.40 children averaged by women with malignant ovarian tumors (0.56 more), but the parameter had no diagnostic statistical significance. The length of use of oral contraceptives in women with benign changes was 2.84 years on the average, and 1.27 years was the average length of contraceptive use in women with malignant process, indicating a high statistical significance of 5%.

The examined women diagnosed with malignant ovarian tumors had pain in the small pelvis as a dominant disease symptom, while in the group with benign tumors, the most frequent reason for a visit to the doctor was regular control of gynecological health.

Among those with benign tumors, the dominant tumor structure was cystic, in contrast to the mixed-type structure in malignant tumors. In this sense, the parameter of tumor structure is a serious factor in distinguishing benign from malignant tumors of the ovary.

In subjects with histopathologically proven malignant tumors the disease was more often bilateral, while it was predominantly unilateral for benign tumors (the difference being highly statistically significant).

Benign tumors measured approximately 70 mm in size, while malignant tumors in the examined group of patients were over 90 mm. Based on this, the size of the tumor is a reliable factor in distinguishing benign from malignant ovarian tumors. The thickness of the wall of benign tumors was higher than the thickness of the malignant tumor wall, and this was a parameter of high statistical significance.

The presence of free fluid in the pouch of Douglas is rare in benign ovarian tumors, and as a rule, when seen, it is associated with the ruptures of the tumor wall (cyst) and most often it is below 50 ml, while in malignant ovarian tumors the presence of free fluid is quite frequent, whereby the quantity is multiple times higher, and often filling the entire volume of Douglas.

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Originalni rad

UDC: 618.11-006-073
doi:10.5633/amm.2018.0111

ULOGA ULTRASONOGRAFSKOG NALAZA U RAZLIKOVANJU BENIGNIH OD MALIGNIH TUMORA JAJNIKA ŽENA U POSTMENOPAUZI

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Maligni tumori jajnika javljaju se u svim životnim dobima, pri čemu ukupna incidencija dramatično sa godinama raste. Preživljavanje od karcinoma jajnika zavisi od stadijuma u kome se bolest otkrije.

Cilj ovog rada bio je utvrđivanje senzitivnosti, specifičnosti i prediktivne vrednosti testova za preoperativno praćenje stanja tumora jajnika kod žena u postmenopauzi, procena eventualnog malignog potencijala i ispitavanje korelacije kliničkog nalaza i značaja ultrasonografskih pregleda u razlikovanju benignih od malignih tumora jajnika.

Istraživanje je definisano po modelima prospektivno-retrospektivne studije koja obuhvata 60 žena u postmenopauzi kod kojih je postavljena dijagnoza postojanja tumora jajnika.

Svim bolesnicama su urađene sledeće pretrage i pregledi: anamnestička analiza kartona, odnosno istorije bolesti, sa podacima o godinama starosti, paritetu, trajanju menopauze, upotrebi oralnih kontraceptiva i simptomatologiji i ultrasonografski pregled male karlice.

Postoji razlika u godinama kod žena sa benignim tumorima jajnika u odnosu na one sa malignim. Žena sa benignim tumorima prosečno je rađala 1,96 dece, prema 1,4o dece koliko je prosečno rađala žena sa malignim tumorima jajnika. Dužina upotrebe oralne kontracepcije kod žena sa benignim promenama iznosila je prosečno 2,84 godine. Prosečna dužina korišćenja kontraceptiva je 1,27 godina kod žena sa malignim procesom, što pokazuje visoku statističku značajnost od 5%. Među ispitanicama sa benignim tumorima, dominantna građa tumora bila je cistična, nasuprot malignim tumorima mešovite građe. Lokalizacija tumora je sa visokom statističkom značajnošću češće bilateralna kod ispitanica sa histopatološki dokazanim malignim tumorima, dok je kod benignih tumora pretežno unilateralna. Veličina tumora je pouzdan faktor u razlikovanju benignih od malignih tumora jajnika. Debljina zida benignih tumora je veća u odnosu na debljinu zida malignih tumora. Prisustvo slobodne tečnosti u Duglasovom prostoru je retkost kod benignih tumora jajnika, dok je kod malignih tumora jajnika postojanje slobodne tečnosti česta pojava.

Acta Medica Medianae 2018;57(1):70-79.

Ključne reči: *ultrasonografija, tumori jajnika, postmenopauza*