

ORIGINAL PAPER

Parity and Menarche as Risk Factors of Time of Menopause Occurrence

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Introduction: Menopause is the last physiological menstruation and represents a crucial moment in the life of every woman. **Objective of the study:** Determine the effect of parity and menarche as risk factors in the time of menopause occurrence. **Patients and methods:** This study included 460 women in natural menopause. Each patient has undergone an interview based on the questionnaire, following the verbal consent of the patient who was previously explained nature of the research. **Statistical analysis** of data was carried out by the usual statistical methods of descriptive statistics, using regression models and „hazard ratio“ for the period of life compared to the individual parameters. **Results :** The average age of menopause occurrence in women who gave birth, was somewhat higher (48.6), in comparison to women who did not give birth (47.8), but the difference was not statistically important ($t=-1.07$, $p=0.287$). In the study group there was no correlation between the age of menarche occurrence and the age of menopause occurrence. **Conclusion:** There is no correlation between the age of menarche occurrence, parity and age of the menopause. **Key words :** parity, menarche, menopause, factors.

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1. INTRODUCTION

Menopause is the last physiological menstruation and represents a crucial moment in the life of every woman. Menopause as complex process encompasses: endocrine, genitourinary, cardiovascular, loco motor system, and leads to vasomotor and psychological symptoms. The first endocrine sign of announcement of menopause is the increase of level of FSH above 30 IU/l. It increases earlier and it is always higher of LH, because the inhibition level is reduced. Increased level of FSH results in faster follicle maturing, so the menstruation cycles are shorter. When there are no follicles able to respond to stimulus of gonadotropin, production of estrogen is insufficient for stimulating proliferation of endometrium and inducing menstruation, and menopause occurs (1, 2, 3). By exten-

sion of the age, menopause occurs today after 30-40 years of sexual maturity in a passionate age when women still do not feel old. The beginning of menopause is subject to individual fluctuations and it cannot be encompassed exactly. Recent researches emphasise that marital status, parity, physical activity, education, urban that is rural environment have enormous influence on age of menopause occurrence in the examined groups (4).

2. AIM

Objective of this study was to determine influence of parity and menarche as risk factors to time of menopause occurrence.

3. METHODS

The research included 460 women in the natural menopause who came

for regular gynecological checkups in the area of Tuzla Canton in the period from January 2009 to December 2010.

The basic criterion for inclusion in the study was that the woman is in the natural menopause, i.e. that it has been more than a year from the last menstruation.

Each patient has undergone an interview based on the questionnaire. The parameters included in the questionnaire are chosen based on the to date theoretical knowledge but also from the results of published studies. Each patient was verbally introduced to nature of the research and her verbal consent was obtained to take part in this research in line with the norms of the ethical medical research. We observed variables related to reproductive health: age of menarche, the average age of menopause, number of deliveries, the number of abortions.

Statistical analysis of data was carried out by the usual statistical methods of descriptive statistics, and for influence of individual factors to the menopause occurrence regression models and „hazard ratio“ for the period of life at the time of menopause occurrence in relation to the individual chosen parameters were used. For comparison of means of age of occurrence of menopause among women groups, defined on the basis of parity factors, we used t test for independent samples or analysis of variance (ANOVA). With Cox regression for certain factors we eval-

uated hazard ratios (HR) and 95% reliability interval (RI). Statistical significance was confirmed at $P < 0.05$. For processing of data we used statistical programme PASW 18 (SPSS Inc., Chicago, Illinois, SAD) and R – programme language for statistical data processing (R Development Core Team, 2008).

4. RESULTS

This research included 460 patients from Tuzla Canton who were in the natural menopause age from 34 to 89 years, with an average age of $60,9 \pm 8,7$ years shown in the chart 1.

In the examined group out of 460 patients 46 (10%) did not give birth, one patient had 11 deliveries (0,2%), while most had 2 deliveries 220 (47,8%) shown in chart 2.

The average age of menopause occurrence in women who delivered, was somewhat higher (48.6 years) in comparison with women who did not deliver (47.8 years), but the difference was not statistically important ($t = -1.07$, $p = 0.287$).

Cox's regression showed the same, that relative hazard for menopause occurrence in relation to delivery is not essentially different from 1 (RR=0.93, 95% IP: 0.68, 1.28; $p = 0.662$), so it is not statistically important, shown in chart 3.

The average age of patients at menarche was $14,65 (\pm 1,535)$ years with maximum at 19 years and minimum at 10 years of age.

We analyzed correlation of age at menarche and age at menopause occurrence but we cannot confirm that there is linear correlation between them ($r = -0,07$, $p = 0,145$), so there is no statistical importance. Relation between variables is shown in the chart 4.

5. DISCUSSION

The menopause occurs after 30-40 years of pubescence when woman does

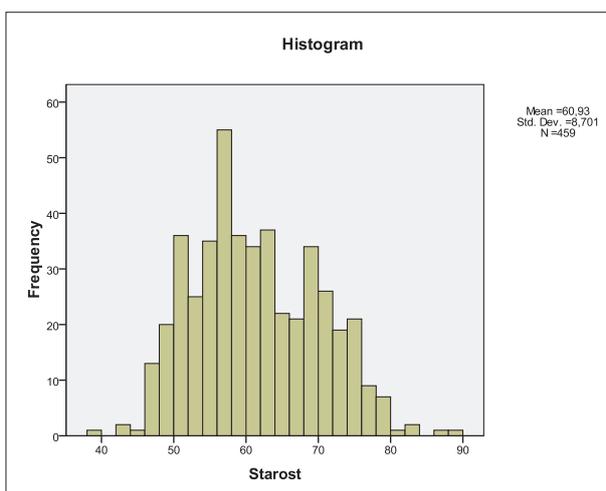


Chart 1. Shows age of patients at the time of interview

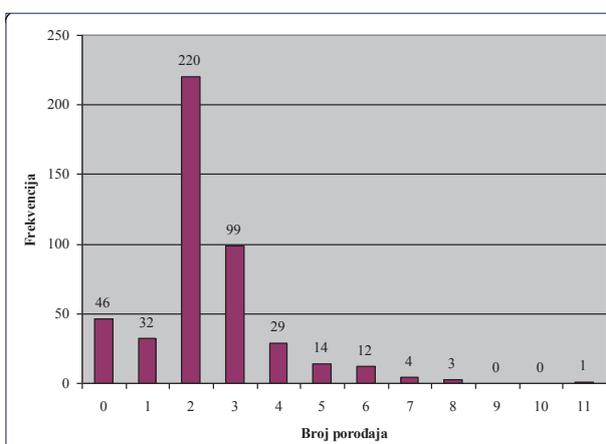


Chart 2. Shows number of deliveries in 460 patients.

not feel old. The beginning of menopause is subject to individual variations and cannot be encompassed exactly.

There are a number of studies in the world which give extensive records on that the age at which the menopause occurs are not fixed, but that it varies from population to population.

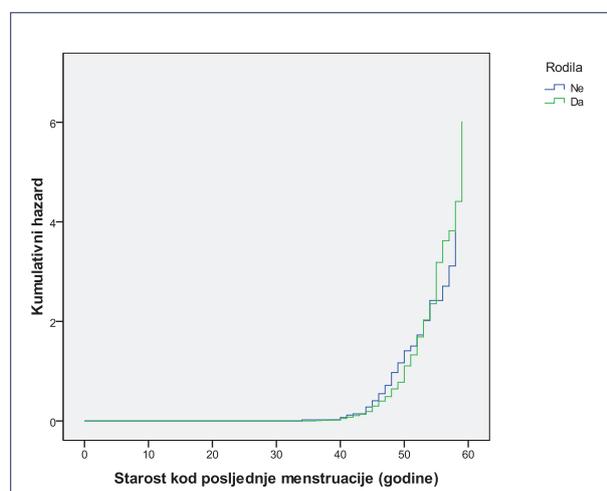


Chart 3. Shows hazard curve for menopause occurrence in relation to delivery.

In our research which was carried out in the area of Tuzla Canton the age for occurrence of menopause was $48,5 (\pm 4,6)$ years.

Parity as factor which influences years of age of menopause was taken into account in many researches. Results of British cohort research speak in favour of increased parity with statistical importance ($p < 0,001$) influencing delayed occurrence of menopause (5). Velez with associates (6) researching the connection of years of age of menopause and parity in the area of Latin America and the Caribbean in 7 cities came to conclusion that null parity, and multiparity (women with 5 and more delivered children) earlier enter the menopause. In the study Women's Health Across the Nation carried out in seven American centres in five ethnic groups in sample of 14,620 women American authors (7,8) noticed connection between parity and age of menopause occurrence. Kuzmarek with statistical importance ($p < 0,01$) emphasizes connection of parity and later occurrence of menopause in Polish women (9). In researches carried out by Lueto with associates in the area of Finland came to the following results: the average age for occurrence of menopause in Finn women is 51 years. Women who did not deliver earlier enter on an average for 1 year than women who delivered, while the women who delivered the first child before their 25 years of age enter menopause on an average at 52 years of age (10,11). In the area of North India in researches carried out by Kriplani and associates researching connection of parity and age of menopause came to results that did not indicate the same (12).

Our results did not show statistical importance of connection of parity factor and age at menopause. In the examined group of women most were with 2 deliveries, 220 (46%) of them, so we are of the opinion that those data was crucial in obtaining our results.

Influence of menarche as factor which in-

fluences the age of menopause occurrence is published in the studies of many authors. Studies of American authors (Genom Wide Association) revealed several new genetic locus connected with menarche age and natural menopause. They consider that there is group of genes connected with premature or delayed puberty which is connected with age of

menarche ($p=0,013$), while the group of genes connected with premature aging of ovary is connected with earlier menopause ($p=0,025$) (13). As per Reinold's and associates research, women who had the first menstruation (menarche) at the age of 11, earlier enter menopause than those who had menarche at 12 year of age and later (14). In the comparative study carried out by Bernis and associates in the region – Madrid got the results which indicated connection between menarche and years of age at menopause (15). There are studies showing opposite results to the above mentioned.

In Pro –Saude study conducted by Brazilian authors (16) statistical importance of connection was not proved between menarche and years of age at the menopause. In our research the results did not show statistical importance between menarche and years of age at menopause, that is, that in women with earlier menarche, there is earlier menopause and vice versa. The average age of interviewed patients was 60,9 ($\pm 8,7$) years, with minimum of 34 years, and maximum of 89 years. Observing the age structure we shall notice that the majority of patients are in an advanced

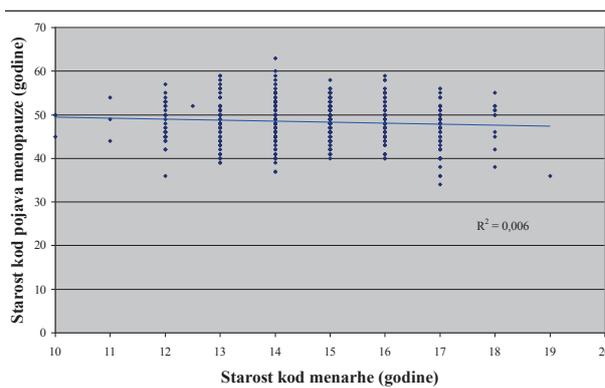


Chart 4. Shows connection between age at menarche occurrence and age at menopause occurrence

age, and the very data on the first menarche are given by recollection, 40 years back, so it is with a touch of sensibility that we have to observe the same at the same time respecting and acknowledging data given by the patients.

6. CONCLUSION

The average age of menopause occurrence in women who gave birth, was somewhat higher (48.6) years, in comparison to women who did not deliver (47.8) years, but the difference was not statistically important. There is no connection between age of menarche occurrence and age of menopause occurrence.

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