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Causes of Sterility in Bosnia-Herzegovina Population

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ABSTRACT

Introduction: Infertility or sterility or barrenness is defined as a state of inability to conceive after a year of unprotected intercourse. Ovulation problems, uterine tube problems, endometriosis, uterine etiology problems, chromosomal problems which are not so rare, spermatogenesis disorders and azoospermia are stated as the most common causes of infertility. **Objective:** Main objective of this research is to present most common causes of marital infertility in Bosnia-Herzegovina population. **Material and methods:** Retrospective, descriptive- epidemiological study has been published at Bahceci IVF center in Sarajevo (Bosnia and Herzegovina). The research covered a time-period of two years. During the time-period in question, 826 marital couples from Bosnia and Herzegovina diagnosed with marital sterility approached the Center. **Results:** Analysis of female patients as per age groups determined that the largest number of respondents belonged to the 36 – 39 age group with a total number of 293 patients, followed by 30 – 35 age group with a total number of 245 patients, and the third most frequent age group included those of ≥ 40 years of age with 179 patients in total, followed by 25–29 age group with 98 respondents. In 42% (n=350) of the couples diagnosed with marital infertility, female sterility was established as the reason, while in 36 % (n=294) of the couples, male sterility was the reason. Both marital spouses were infertile in 11% of the couples (n=92), while in remaining 11% of the couples, no diagnosis was determined and they belonged in the group of unexplainable sterility. The most common cause of sterility in women is diminished ovarian reserve (DOR), as was the case in 38.57% of respondents. This diagnosis is in direct correlation with the age of a woman. Among causes of sterility of organic and functional origin, the most common is ovarian tube problem – in 31.4% of the cases, then ovulatory problems – in 12.86% of the cases, and polycystic ovary syndrome in 6% of the cases. Other causes such as endometrioma, endometriosis and genetic factors are present in less than 2% of respondents. Regarding male sterility, problems with spermatogenesis are prevailing (decreased number and mobility of sperm cells and problems with morphology of sperm cells), oligoasthenoteratozoospermia in 81.61% of the patients. In 14.19% of the cases, azoospermia was present. **Conclusion:** All of this contributes to the negative demographic trend in Bosnia and Herzegovina. In 2008, European Parliament warned of importance of infertility treatment. In collaboration with ESHRE (European Society of Human Reproduction and Embryology), main guidelines to alleviate this problem were provided.
Key words: infertility, Bosnia and Herzegovina.

1. INTRODUCTION

Infertility or sterility or barrenness is defined as a state of inability to conceive after a year of unprotected intercourse. Ovulation problems, uterine tube problems, endometriosis, uterine etiology problems, chromosomal problems which are not so rare, spermatogenesis disorders and azoospermia are stated as the most common causes of infertility (1). However, the primary cause of infertility in marital couples is marriage in older age and postponement of first pregnancy and parturition. A detailed clinical, laboratory diagnostics usually determines the cause of infertility. Statistical data shows that the percentage of infertile men and infertile women is the same, and that there are also cases where the cause of infertility is in both spouses, while idiopathic or unexplainable infertility is defined as a state for which medical tests cannot establish the real cause of infertility. (2). Today, multidisciplinary approach to the infertility issues shed light to many factors which constitute a part of everyday life with potential to cause idiopathic sterility. Besides their effect on reproductive ability of men and women, these factors of everyday life also greatly affect the outcome of assisted fertilization method. Main factors associated with infertility are weight, smoking and age, while other factors such as nutrition, physical activity, psychological stress, caffeine and alcohol affect the general health to some extent, and thus reproductive ability as well. Women between 20 and 24 years of age have the greatest reproductive ability and chance of pregnancy. On average, 85–90% of young and healthy couples achieve pregnancy within one year of unprotected intercourse; hence the infertility rate is 10-15% for women younger than 35 years. However, this rate climbs to about 33% for women in 35 – 40 age group, while 87%

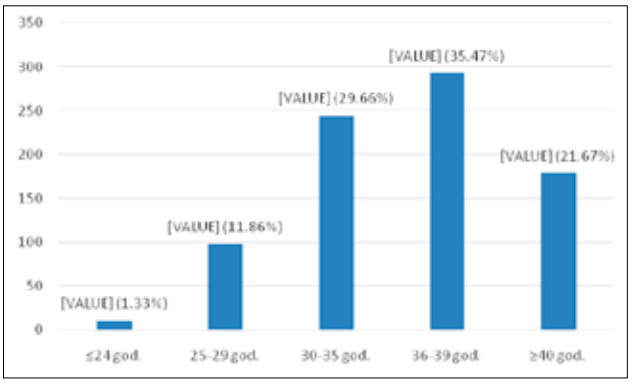
of 45 years old women have no possibility of conceiving a child. (3, 4) As primary reason, diminished ovarian reserve is stated, as well as lowered quality and ability of ovarian cell fertilization, smaller number of sexual relations, larger number of clinical and subclinical miscarriages and various conditions which lessen the chance of fertilization, the rate of which increases with aging (endometrioma, endometriosis, mioma). After 35 years of age, infertility is present in 50% of couples, and the percentage of those with primary infertility increases. Main objective of this research is to present most common causes of marital infertility in Bosnia-Herzegovina population.

2. RESPONDENTS AND METHODS

Retrospective, descriptive–epidemiological study has been published at Bahceci IVF center in Sarajevo (Bosnia and Herzegovina). The research covered a time-period of two years. During the time-period in question, 826 marital couples from Bosnia and Herzegovina diagnosed with marital sterility approached the Center. For each couple, detailed anamnestic , clinical, ultrasonic and laboratory analysis was done which confirmed the diagnosis and possibly determined the cause of infertility. Data on all patients have been entered into patient charts and MITERI, patient-tracking software. Parameters of age of female patients, cause of sterility, diagnostic conditions of infertility in men and women were taken from the database. All data were then statistically processed by way of SPSS statistical program (ver. 21) and they are displayed in tables and graphs.

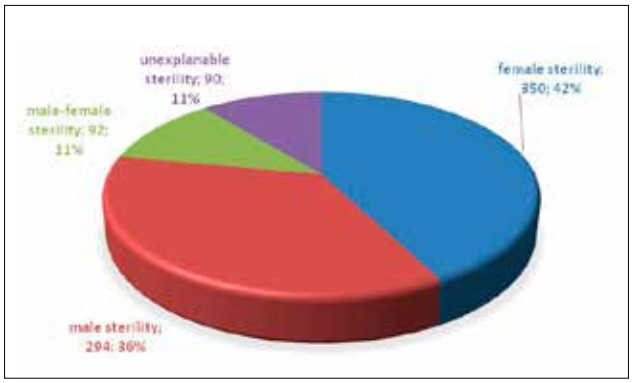
3. RESEARCH RESULTS

Retrospective – descriptive analysis which encompassed a time-period of two years (June 1st 2012 – June 1st 2014) was done. The research was performed in Bahceci IVF center, and it included all couples who had been diagnosed with marital infertility. The research included 826 couples from the territory of Bosnia and Herzegovina. Analysis of female patients as per age groups determined that the largest number of respondents belonged to the 36 – 39 age group with a total number of 293 patients (35.47%), followed by 30 – 35 age group with a total number of 245 patients (29.66%), and the third most frequent age group included those of ≥ 40 years of age with 179 patients in total (21.67%), followed by 25–29 age group with 98 respondents (11.86%). In ≤24 age group, there were only 11 respondents (1.33%). Average age of respondents in this research was 35.41±5.21; oldest respondent was 49, and the youngest was 20 years of age.



Graph 1. Age of respondents in the research

In 42% (n=350) of the couples diagnosed with marital infertility, female sterility was established as the reason, while in 36 % (n=294) of the couples, male sterility was the reason. Both marital spouses were infertile in 11% of the couples (n=92), while in remaining 11% of the couples, no diagnosis was determined and they belonged in the group of unexplainable sterility.



Graph 2. Display of marital sterility

In table 1, a detailed analysis of causes of sterility in men and women in this research is shown. The most common cause of sterility in women is diminished ovarian reserve (DOR), as was the case in 38.57% of respondents. This diagnosis is in direct correlation with the age of a woman. Among causes of sterility of organic and functional origin, the most common is ovarian tube problem – in 31.4% of the cases, then ovulatory problems – in 12.86% of the cases, and polycystic ovary syndrome in 6% of the cases. Other causes such as endometrioma, endometriosis and genetic factors are present in less than 2% of respondents. Regarding male sterility, problems with spermatogenesis are prevailing (decreased number and mobility of sperm cells and problems with morphology of sperm cells), oligoasthenoteratozoospermia in 81.61% of the patients. In 14.19% of the cases, azoospermia was present.

Women		
DOR	135	38.57%
Endometrioma	6	1.71%
Endometriosis	4	1.14%
Genetic factor	1	0.29%
Ovulatory problems	45	12.86%
PCOS	21	6.00%
Neurogenic factor	14	4.00%
Tubal factor	110	31.43%
Vaginismus	1	0.29%
Other	13	3.71%
Men		
Azoospermia	44	14.19%
OAT	253	81.61%
Other	13	4.19%

Table 1. Display of respondents as per cause of sterility

4. DISCUSSION

It is a cause for concern that on every 10,000 citizens, 83 babies are born every year in Bosnia and Herzegovina, which puts this country at the bottom of the region regarding birthrate. Statistical data shows that in Serbia, 90 babies on every 10,000 citizens are born every year, and 94 babies on every 10,000 citizens are born every year in Croatia (5). This alarming figure

Canton	Livebirths	Deaths	Natural increase	Infant deaths	Number of marriages	Number of divorces	**Vital index**
Total	19575	19605	-30	135	11113	828	100
Una-Sana	2119	2235	-116	16	1423	184	95
Posavina Canton	155	454	-299	-	151	22	34
Tuzla Canton	4158	3617	541	39	2382	184	115
Zenica-Doboj Canton	3382	3290	92	12	1945	213	103
Bosnia – Podrinje Canton	200	223	-23	-	137	9	90
Central Bosnia Canton	2029	2189	-160	12	1079	60	93
Herzegovina-Neretva Canton	1825	2090	-265	18	996	65	87
West Herzegovina Canton	760	790	-30	4	317	16	96
Sarajevo Canton	4532	3891	641	31	2458	71	116
Canton 10	415	826	-411	3	225	4	50

Table 2. Tabular oversight of vital events in FBIH for 2013. http://www.bosnaonline.org/federacija-bih-prikaz-prirodni-prirastaj-natalitet-zivorodeni-2013-godina/screenhunter_89-feb-12-21-20/

shows that in Bosnia and Herzegovina, birthrate is constantly falling. It's worth mentioning that major demographic changes are taking place in Bosnia and Herzegovina since the end of war. According to data from the UN, 83 countries have problematic birth rate. In those countries – and Bosnia and Herzegovina is one of them – women will not give birth to a sufficient number of daughters to replace them unless the rate of fertility increases, i.e. the number of children born per a woman. Therefore, the citizens of Bosnia and Herzegovina might completely "disappear" between the years 2500 – 2600 (6). In the past 50 years, a whole host of parameters to describe reproduction and its outcome in Europe have been pointing to a downward trend (7). Along with biological markers of fertility (ovulation, sperm quality, frequency of intercourse, fertilization rate, frequency of spontaneous miscarriage), the best demographic marker of fertility is the rate of live-born dizygotic twins from natural or IVF conceptions. The analysis of demographic trends in Bosnia and Herzegovina determines a drastic fall of birth rate, primarily in Republic of Srpska, and also in Federation of B&H. Data for 2013 shows negative natural increase in 8 out of 10 cantons of Federation of B&H. This alarming data speaks in favor of the claim that infertility epidemics is deeply affecting our population, and that without specific medical, social and political steps, this "crisis" can deepen.

5. CONCLUSION

Retrospective study has shown that the frequency of marital sterility causes is approximately equal in men and women in Bosnia and Herzegovina. Analysis of age of infertile women showed that infertility usually appears between 36 and 39 years of age, which correlates with DOR diagnosis (diminished ovarian reserve) as the main cause of sterility in women. The consequence of such condition is delaying birth of a first child and a need for additional education during professional life and carrier. In men, frequency of azoospermia is increasing. All of this contributes to the negative demographic trend in Bosnia and Herzegovina. In 2008, European Parliament warned of importance of infertility treatment. In collaboration with ESHRE (European Society of Human Reproduction and Embryology), main guidelines to alleviate this problem were provided. Main recommendations refer to creation of macroeconomic conditions to increase the birthrate, but also availability of diagnostic and therapeutic methods for infertile couples. Also, it is recommended that all countries incorporate assisted fertilization methods in their population policy.

CONFLICT OF INTEREST: NONE DECLARED.

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