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OBSERVATIONS ON SOME ASPECTS OF HUMAN MASCULINE INFERTILITY

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***Key words**: fertility/male sterility, spermogram, spermoculture, the propulsivity index*

INTRODUCTION

Infertility is a health problem that affects a surprisingly large number of couples - at least one in ten couples is confronted with this problem. Beyond physical aspects, which sometimes cause discomfort (for example, pain caused by endometriosis), infertility produces tremendous psychological, emotional and spiritual suffering, comparable to suffering from terminal illness.

In over 80% of cases of male sterility, a serious exploration protocol will allow a clear etiological factor to be highlighted, and tailored treatment can provide a reasonable chance of success.

Causes of sperm infertility can be: insufficient sperm volume in the ejaculate, insufficient sperm motility (astenospermia), presence of pathological spermatozoa (teratospermia), complete immobility of spermatozoa (necrospermia), spermlessness (azoospermia). The quality of sperm is also determined by other indices, such as: viscosity level, acidity level, sperm stability to chemical changes and chemical actions, sperm motility duration, fructose content, hormones, etc.

So it's about a whole science - *spermology*, which has developed especially in the last decades. Male or female male fertility can be determined by: Inflammatory diseases, in particular blennorrhagia, infectious diseases, for example, epidemic parotiditis (mumps), chronic poisoning (alcoholism, drugs, some exposure to toxins, including rhentogenic and radiodiagnosis)

Traumas of the central nervous system and genital organs, endocrine (thyroid gland) diseases, nervous system centers that regulate the normal interconnection of endocrine organs, advanced age, obesity, smoking, lifestyle, etc.

All of these causes can be detected only after detailed medical examination and, of course, whether the man understands the need for this examination.

MATERIAL AND METHODS

36 men were examined who presented themselves at the "Dr. Popa Emilia "in Bacau for investigations into male fertility in April, May, June, 2016.

As working methods were used:

• Spermogram - the "normal" values of a spermogram are much controversial. In several European countries and in Romania (for 5 years), the following values are accepted as normal:

- Volume: over 2 ml
- Number of sperm: 20-100 million / mmc
- Mobility: over 60%
- Normal forms: over 50%
- pH: 7.2 - 7.8

- Sperm culture - on blood-to-blood culture media and MacConkey.
- Calculating **the propulsivity index** according to the Farris formula.

One of the specialists' concerns was to find methods to determine sperm fertilization capacity. A series of fertility indexes based on the rate of sperm progression have been proposed for this purpose. We quote the propulsion index described by Hynie, which records in seconds the time when 100 sperm passes through the two sides of a Thomas chamber or the Farris index derived from the formula:

$$I = \frac{V \times N \times M}{100}$$

V = sperm volume in ml,
N = sperm count / ml,
M = percentage of mobility.

Index values above 200 show a fertile sperm.

RESULTS AND DISCUSSIONS

The data obtained from the investigations were statistically processed and recorded in graphs.

From the analysis of the results obtained from the investigations, it results that all 36 patients have fertility problems in varying degrees of severity. The predominantly affected age is between 26 and 35 years of age (Figure 1), as well as the age at which

men want to become fathers, and therefore they pose a problem of fertility dysfunction if a child is late. Of course, men in the urban environment (91%) predominate because they have easier access to such an investigation and are more exposed to a profile laboratory (Figure 2).

The results of the spermogram in patients presenting at the clinic show that the sperm morphology is below the normality limit in all patients (Figure 3). Under normal circumstances, over 50% of sperm should have a correct morphology. In most investigated men, sperm is present, but there are also few cases with sperm counts that indicate absent sperm what absolute sterility means. In our study there were two cases of azospermia in a male of 31 and 36 years, respectively. However, sperm mobility is not very good, here only 17% are within the normal limits, respectively 60% of the spermatozoa (Figure 4).

Following the bacteriological examination (spermoculture), the majority of patients (71%) had negative results, indicating the normality and lack of pathogenic contamination (Figure 5). Positive pathogenic bacteria *Staphyloccocus aureus*, followed by *Escherichia coli* and *Klebsiella* sp. (Figure 6), were identified in patients with positive sperm culture.

Volume and density of sperm are important indicators of masculine fertility capacity. The sperm volume is normally over 2 ml and sperm density (normal) is normal at 20-100 ml / ml. The results of the spermogram in our study show that 77% of patients have a sperm volume below 2ml, pathologically, and only 23% have a normal sperm volume (Figure 7). In the case of sperm density, the situation is, of course, the same (Figure 8).

The fertilization capacity of the sperm based on the altering of the propulsivity index according to the Farris formula is in the majority of the absent patients (86%), only in 14% of the fertility capacity is partially present (Figure 9).

CONCLUSIONS

The following conclusions are drawn from this study:

- All investigated patients have fertility problems in varying degrees of severity. The predominantly affected age is the youngest, aged 26-35.
- Most patients come from the urban environment (91%) because they have easier access to such investigations, but also because in this environment there may be more disturbing causes of male fertility disturbance.
- All patients presented a morphology of modified sperm in the pathology (oligospermia, azoospermia, astenospermia and teratospermia).
- Concerning sperm motility, only 17% of the investigated patients were within normal limits, the rest of 83% were under normality, with high percentages of immobile spermatozoa.
- 29% of patients had bacterial infections in sperm culture, most common with *Staphylococcus aureus* (11%) and *Escherichia coli* (11%). Most patients (71%) had negative sperm counts.
- Fertility capacity is missing in 86% of patients and only 14% have partial fertility.
- Alongside the biological causes of male fertility disorders, social and psychological factors are increasingly being considered. Thus, stress, psychoneurosis, emotional shocks have proven to be factors that alter both sperm count and sperm quality.
- There is a need for information campaigns to give people a fair picture of the existence of infertility as a disease, of the many causes that may involve the reproductive system of the woman, the man, or both, about the possible investigations for determining the cause of infertility, but also about the existing treatment options.

ABSTRACT

The paper presents a study on the assessment of male fertility by investigating 36 men who presented themselves at the "Dr. Popa Emilia "from Bacău during the period April - June 2016. Spermograms were used as working methods, taking into account: the number of sperm, mobility, morphology and pH, spermoculture carried out on blood-cultured jealously and MacConkey and the propulsivity index (sperm fertilization capacity) calculated according to Farres' formula.

REFERENCES

1. ANGHELESCU. IONELA, CORICOVAC ANCA, MARINESCU BOGDAN. Vârsta şi fertilitatea – cunoştinţe generale legate de influenţa vârstei asupra fertilităţii. Revista Medicală Română, volumul LX, nr. 4, 2013. (Age and fertility - general knowledge of age influence on fertility, Romanian Medical Journal, volume LX, no. 4, 2013).
2. HASHILONI-DOLEV et al, 2011. The fertility myth: Israeli students knowledge regarding age-related fertility decline and late pregnancies în

an era of assisted reproduction technology. Hum. Reprod. 2011; 26:3045-3053
3. LAMPIC C., SVANBERG A.S., KARLSTROM P., TYDEN T. Fertility awareness, intentions concerning childbearing, and attitudes towards parenthood among female and male academics. Hum. Reprod. 2006; 21:558-5Ý64.
4. LEENERS B., GERAEDTS K., IMTHURN B., STILLER R. The relevance of age în female human reproduction. Current situation în Switzerland and pathophysiological background from a comparative perspective. Gen. Comp. Endocrinol. 2013 Mar 21. pii: S0016-6480(13)00112-3
5. LIU K., Case A. Advanced reproductive age and fertility. J Obstet. Gynaecol. Can. 2011 Nov; 33(11):1165-75
6. MORAGIANNI V.A., PENZIAS A.S. Cumulative live-birth rates after assisted reproductive technology. Curr. Opin Obstet. Gynecol. 2010; 22:189-192.
7. TYDEN T., SVANBERG A.S., KARLSTROM P.O., LIHOFF L., LAMPIC C. Female university students' attitudes to future motherhood and their understanding about fertility. Eur J Contracept Reprod. Health Care 2006; 11:181-189.

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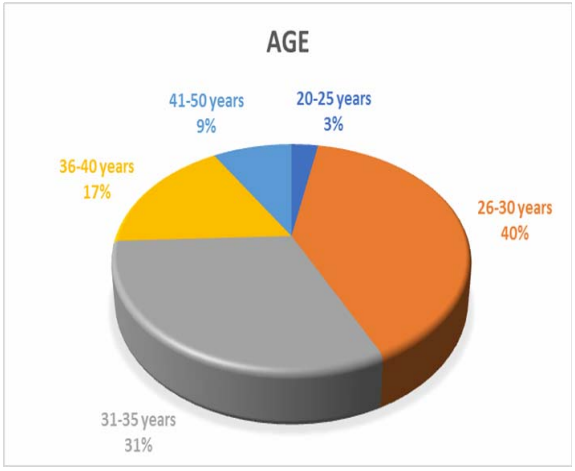

Fig. 1. Percentage distribution of the investigated patients by age group.

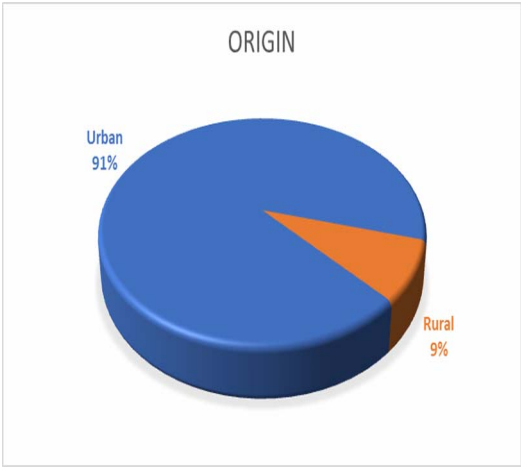

Fig. 2. Percentage distribution of the investigated patients by the place of origin

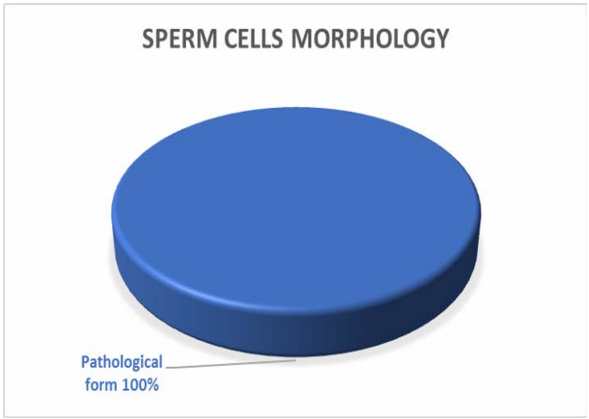

Fig. 3. Sperm morphology in the investigated patients.

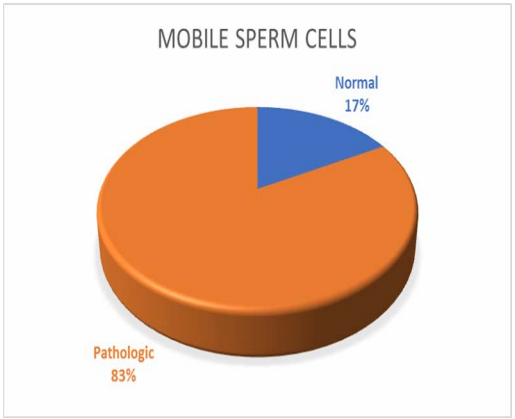

Fig. 4. Percentage distribution of sperm counts with normal mobility

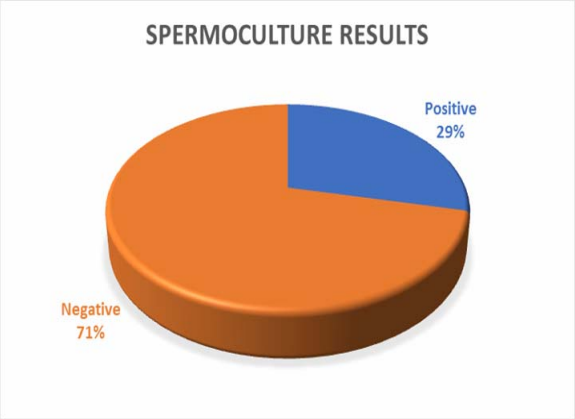

Fig. 5. Patient distribution after sperm count.

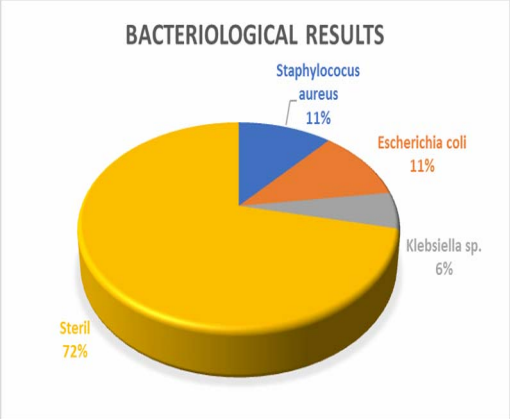

Fig. 6. Distribution of subjects after bacteriological examination

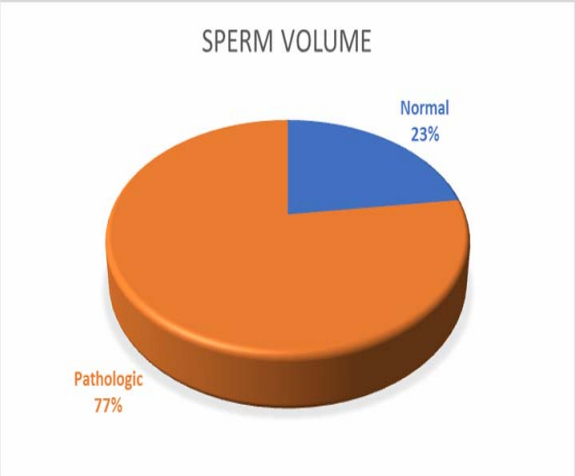

Fig. 7. The results of the sperm count on sperm volume of the investigated patients.

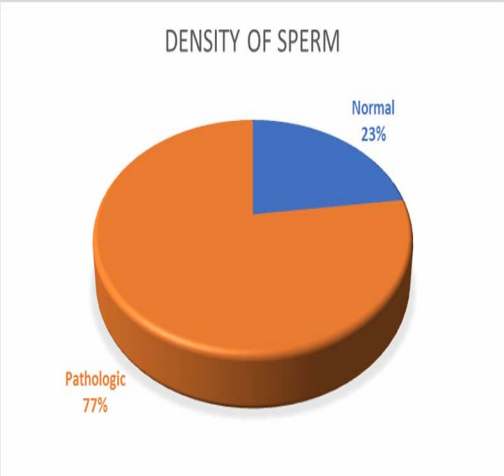

Fig. 8. The results of sperm counts about sperm density of the investigated patients.

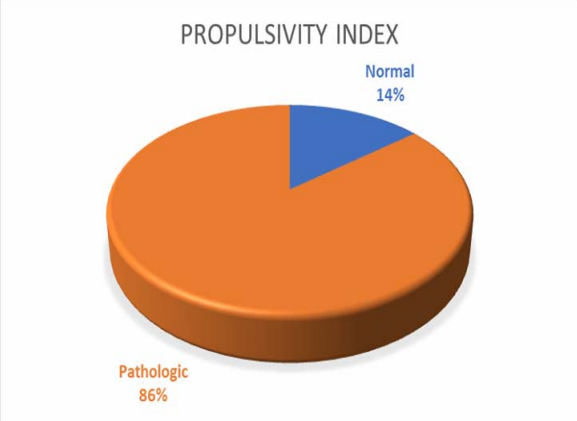

Fig. 9. Fertility capacity (propulsivity index) of sperm expressed as a percentage of the investigated patients