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ANALYSIS OF THE INFLUENCE OF SMOKING AND ALCOHOLISM ON SEMEN QUALITY AND ITS INFLUENCE ON MALE FERTILITY

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INTRODUCTION

Sperm quality in men is associated with lifestyle habits, smoking, sitting for long hours, influence motility and sperm count (BLAY et al., 2020). Approximately 37% of men of reproductive age smoke cigarettes, Europe has the highest tobacco consumption among all regions of the World Health Organization (SHARMA; HARLEV; AGARWAL; ESTEVES, 2016). Spermatozoa in the presence of cigarette and alcohol components have a rapid reduction in terms of survival time, which is detrimental to fertility (SAARANEN; SUONIO; SAARIKOSKI, 1987). Smoking toxins can potentially affect sperm development and function, with a negative effect on semen parameters (SHARMA; HARLEV; AGARWAL; ESTEVES, 2016).

Idiopathic infertility is dramatically affected by cigarette consumption (COLLODEL et al., 2009). Smoking alters semen parameters, such as: DNA fragmentation and abnormalities, being proportional to the number of cigarettes smoked per day and the duration of smoking. The condensation of sperm chromatin and sperm viability is also present in their use (MOSTAFA., 2018).

Approximately 8% to 58% of male individuals who consume alcohol will suffer from some sexual pathology, including impotence, testicular atrophy and decreased sexual interest (PASQUALOTTO et al., 2004). Alcohol consumption can influence reproductive hormone regulation, decreasing testosterone levels and quantity, Leydig cell morphology, reduced semen quality, resulting in reduced sperm concentration and motility, in addition to increased abnormal sperm morphology and imperfection in chromatin condensation, these parameters were also found by (FINELLI et al, 2021).

Acute stress can also become harmful for testicular functions, raising cortisol levels in both germ cells and Leydig cells (ILACQUA et al., 2018). Smoking can increase the level of reactive species in seminal plasma, decrease the total sperm count. Progressive sperm motility induces sperm malformation and sperm DNA fragmentation in preconception men (BAO et al., 2019).

JUSTIFICATION

Incorrect lifestyle has serious consequences on semen production, specifically on the reduction of important sperm cytogram parameters, as alcoholism and smoking promote oxidative stress, which directly influence the reduction of seminal volume, sperm concentration and morphology. The habit of alcoholism and regular smoking significantly affects the quality of the semen and can lead to infertility.

GOALS

GENERAL GOALS

Encompass a sufficient semen sampling to faithfully compare the semen parameters analyzed for the abusive consumption of alcohol and tobacco, in addition to analyzing the data from the data collection to clarify the questions of the development work, always seeking the correlation of alcohol consumption and tobacco with interference in seminal parameters.

SPECIFIC OBJECTIVES

Point out the direct influences of alcohol and tobacco consumption on the results obtained from the sperm cytogram reports and clearly translate the observed interventions in semen quality, with the intention of elaborating an informative inventory that clearly demonstrates the investigation of alterations in the sperm cytogram with dyears systemic.

METHODOLOGY

This is a field, descriptive and qualitative study of the use of alcohol and smoking in the interference of semen quality of men in the city of Altamira Pará from March to June 2023. Terms of responsibility and commitment were made between the investigated and the research group (attached).

The contact with the research collaborators, so that they would allow the investigation of their seminal volumes in order to perform the sperm cytogram exam for an academic research, was challenging, as the group received both positive and negative responses. As much as they informed that the names of the investigated people would not be disclosed, it was not enough to convey comfort to those investigated. So, we are already very grateful to those who allowed us to carry out our field research.

Men who are willing to participate with biological material will receive a form to fill out (attached).

They will be oriented so that the collection is done with abstinence for at least 3 days and the total volume of the ejaculate is collected in a universal sterile bottle that will be delivered to the participants to collect the material in the laboratory, where this same material began to be analyzed in a maximum of 25 minutes the following parameters:

- Volume;
- pH;
- Odor;
- Color;
- Liquefaction;
- Viscosity;

In the slide/coverslip analysis, it is observed:

- Proportion of furniture / real estate;
- Verification of which dilution will be adopted;
- With the help of eosin / negrasin, the proportion of living / non-living (of properties0) is verified

Next, the semen will be diluted in 0.05% formalin, in proportions that will vary from 1:20, 1:40, 1:50 or 1:2, depending on the previous analysis performed in Slide / Coverslip visualization for subsequent use of dilution. With the appropriate dilution, the sample will be transferred to a Neubauer chamber where the following parameters will be analyzed:

- Number of sperm per ml;
- Number of sperm per total sample volume;
- Number of red blood cells;
- Number of leukocytes;
- Morphology.

Finally, a report will be made, where all the parameters described above will be included.

RESULTS AND DISCUSSIONS

After laboratory analysis of the semens, the following numbers were obtained:

In view of the results of the sperm cytograms of the 16 employees, where 10 use alcoholic beverages, 4 use tobacco and 4 use alcohol and tobacco, it is concluded that the prolonged use of the aforementioned substances, even for recreation, lead to changes observable in the parameters described in the sperm cytogram reports, which are: motility, volume per ml, viscosity, number of dead spermatozoa among the immobile ones, total volume of the ejaculate in ml.

This means that male individuals who use alcohol, tobacco or alcohol and associated tobacco, as previously mentioned, commit to seminal health and consequently will have reduced fertility compared to individuals of the same sex who do not use the substances described, thus demonstrating the influence of toxic substances contained in alcohol and tobacco with seminal qualitative suppression.

The work was limited to collaborators who, in a way, were willing to cooperate with the academic initiative out of curiosity that

Pacient	Age	Marital status	Number of children	Does the person use alcoholic beverages?	Is the person a smoker?	Previous diseases?	The person is using medicine?	The person has already had a spermogram-previously?
01	18 years	Single	0	No	No	No	No	No
02	24 years	Single	0	No	No	No	No	No
03	21 years	Married	0	No	No	No	Yes	No
04	25 years	Single	0	Yes	No	No	No	No
05	25 years	Single	01	Yes	No	No	No	No
06	22 years	Single	0	No	No	No	No	No
07	26 years	Single	0	Yes	No	No	No	No
08	24 years	Married	0	Yes	No	No	No	No
09	34 years	Stable union	0	Yes	Yes	No	No	No
10	21 years	Single	0	No	No	No	No	No
11	20 years	Single	0	Yes	No	No	No	No
12	22 years	Single	0	Yes	No	No	No	No
13	42 years	Married	05	Yes	No	No	No	No
14	20 years	Single/ Dating	0	Yes	No	No	No	No
15	46 years	Married	02	No	No	No	Yes	No
16	18 years	Single	0	Yes	Yes	No	Yes	No

Table 1: Record Form / Spermogram Questionnaire.

Pacients:	01	02	03	04
Physical exam: Volume Color; Viscosity; Liquefaction Time; Ph	3,5/7,0/ml Cin. Opalescent Heterog. /Homog. 25 min/20 min 7.5/7.0	4,0/8,0/ml Cin. Opalescent Normal/ Homog. 15min/60min 7.5	8,0/ml Cin. Opalescent Homog. 30 min 7.5	2,5/ml Cin. Opalescent Homog. 15 min 7.5
Sperm count: Per ml; by volume	1 million/6 million/ml 4 million/42 million	3 million/18 million/ml 12 million/144 million	38 million/ml 304 million	10 milhões/ml 25 milhões
Motility: Fast;Slo; in sito	60%/23% 30%/50% 10%/25%	30%/60% 65%/25% 5%	46% 53% 1%	30% 65% 5%
Properties: Eosin negative - live; Eosin positive - dead	50%/45% 50%/65%	50%/60% 43%/40%	70% 30%	70% 30%
Cytometry and Cytology: Leukocytes	150/ul			
Sperm morphology: normal SPTZ; abnormal SPTZ; precursor cells	25%/50% 58%/50% 17%	50%/27% 43%/33% 7%/40%	40% 30% 10%	36% 54% 10%
Conclusion:	Relative/absolute oligozoospermia	relative oligozoospermia		

Table 2: Patient Results with Seminal Analysis with Norm

Pacients:	06	05	07	08
Physical exam: Volume; Color; Viscosity; Liquefaction Time; Ph	1,0/5,0/ml Cin. Opalescent Heterog. / Approval 60 min/30 min 7.5/7.0	5,0/ml Cin. Opalescent Homog. 15 min 7.0	6,0/ml Cin. Opalescent Homog. 37 min7,0	7,0/ml Cin. Opalescent Heterog. 20 min7,0
Sperm count: Per ml; by volume	4 million/6 million/ml 4 million / 30 million	43 million/ml 215 million	78 million/ml 468 million	22 million/ml 154 million
Motility: Fast; Slow; in sito	30% 65%/20% 5%/50%	40% 55% 5%	65% 30% 5%	35% 10% 55%
Properties: Eosin Negative-Live; eosin positive-dead	50%/60% 50%/40%	75% 25%	60% 40%	25% 75%
Sperm morphology: normal SPTZ; abnormal SPTZ; precursor cells	75%/40% 25%/20% 40%	47% 53%	35% 56% 9%	45% 36% 19%
Conclusion:	relative oligozoospermia			Note: number of dead sperms above normal.

Pacients:	09	10	11	12
Physical exam: Volume; Color; Viscosity; Liquefaction Time; Ph	6,0/ml Cin. Opalescent Homog. 15 min7,5	9,0/ml Cin. Opalescent Homog. 20 min7,0	4,0/ml Cin. Opalescent Homog. 15 min7,0	6,0/ml Cin. Opalescent Homog. 20 min7,0
Sperm count: Per ml; by volume	27 million/ml 162 million	5 million/ml 45 million	68 million/ml 272 million	95 million/ml 570 million
Motility: Fast; Slow; in sito	50% 40% 10%	35% 60% 5%	70% 29% 1%	75% 23% 2%
Properties: Eosin Negative-Live; eosin positive-dead	65% 35%	50% 50%	70% 30%	70% 30%
Sperm morphology: normal SPTZ; abnormal SPTZ; precursor cells	41% 59%	40% 55% 5%	40% 51% 9%	53% 46% 1%

Pacients:	13	14	15	16
Physical exam: Volume; Color; Viscosity; Liquefaction Time; Ph	8,0/ml Cin. Opalescent Homog. 15 min7,5	5,0/ml Cin. Opalescent Homog. 35 min7,0	6,0/ml Cin. Opalescent Homog. 15 min7,5	4,0/ml Cin. Opalescent Homog. 15 min7,0
Sperm count: Per ml; by volume	78 million/ml 390 million	78 million/ml 390 million	500000/ml 3 million	18 million/ml 72 million
Motility: Fast; Slow; in sito	35% 40% 25%	70% 25% 5%	10% 5% 85%	70% 25% 5%
Properties: Eosin-negative live; eosin positive-dead	76% 27%	75% 25%	30% 70%	65% 35%
Sperm morphology: normal SPTZ; abnormal SPTZ; precursor cells	34% 54% 12%	50% 47% 3%	25% 37% 38%	34% 66%
Conclusion:			absolute oligozoospermia	

the theme promotes, but it leaves an infinite range of discussions if the number of people investigated were correlated by age group, by common characteristics of consumption of alcohol, by common characteristics of cigarette consumption, or by common characteristics of alcohol and tobacco consumption together.

In addition, surprising, unexpected and inconclusive results were found in the survey with the 16 collaborators, which further expands the range of discussions, and opens up a great question mark regarding the true causes of the unusual results.

However, the Analysis of the Influence of Smoking and Alcoholism on Semen Quality and its Influence on Male Fertility, suggests, further on, further analysis regarding the collection of a larger number of subjects so that the error in concluding the tendon data the decrease.

CONCLUSION

We collected precise information after laboratory analysis of the biological material (semen) of sixteen random collaborators who, after correctly filling out the previous form and collecting the material in the laboratory itself, where this same material began to be analyzed in a maximum of 25 minutes, however we manufactured a report containing all the information necessary for medical diagnostic support. And, according to the results of the sperm cytogram, we disseminate to the community the correlation of the risks of alcohol and smoking directly influencing the health of the semen and the normality values of the semen tests (Sperm Cytogram).

This way, we prepared the results, according to the research presented in this work, aiming at the significant influence of smoking and alcoholism on several factors such as: reduction in the number of spermatozoa, oxidative stress, reduction of semen viscosity, reduction of seminal volume, concentration of sperm and morphology. These factors were used as a parameter to justify the low sperm effectiveness regarding fertilization for those who use, even recreationally, alcohol, tobacco or associated alcohol and tobacco.

It was concluded that the toxins present in cigarettes and alcohol, which mainly impair sperm motility and seminal fluid quality, resulting in a possible progressive deterioration of semen quality, is common in the conclusions of the researched articles as a basis for logistical support for this work, to the point of presenting some studies that prove that alcohol and tobacco influence men's seminal activity, such as: (SURVEY WITH 965 BRAZILIAN MEN REVEALS: CIGARETTE ALCOHOL DECREASES SEMINAL QUALITY. Published on January 2, 2019 by the team of Fertility Medical Group, the results were published in the scientific journal ``Andrologia``).

This way, the 16 collaborators of the research: ANALYSIS OF THE INFLUENCE OF SMOKING AND ALCOHOLISM ON THE QUALITY OF THE SEMEN AND ITS INFLUENCE ON MALE FERTILITY, it was observed that most of those investigated showed significant changes, in addition to being highlighted by this work, alert situations for neutral employees, that is, employees who do not use alcohol and tobacco who have the following characteristics:

Collaborators 1 and 2 (blood brothers);

Collaborator 6 (cousin of collaborators 1 and 2); Collaborator 15 (makes use of anabolic steroids).

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