

Comprehensive Study on the Profession and the Prevalence of Antisperm Antibodies among Infertile Male Population

Dr. Joseph Pushpa Innocent.D, Dr. Suseela, M.R, Dr. G.Prathba

Department of Microbiology, Rajah Muthiah Medical College, Annamalai University, Chidambaram, India.

Abstract- A total number of 402 infertile males aged between 25 and 50 were studied for the presence of antisperm antibodies (ASA) in their blood. They were grouped together basing on their occupation and the nature of their work, which included drivers, business men, gold smith Industrial workers and teachers. Prevalence of ASA among these groups was studied and the results were analyzed. It was observed that the formation of ASA was associated with the temperament of the individual and the environment of occupation. Stress, tension pollution reduced physical activity and occupational temperature were directly proportional. Stress associated personal habits like smoking and alcoholism were found to be related factors. Further 85% of the infertile men with obesity showed ASA positivity.

years of age groups. The study was conducted during the period between December 2008 and March 2012. Clinical and familial history along with other personal details like profession, habits, smoking and consuming alcohol were also recorded.

Methods

Sera were separated from the blood samples and were tested by Enzyme immuno assay for the presence of antisperm antibodies. The results are tabulated. Profession wise distribution of ASA positivity was calculated. Personal data collected from the infertile men were analyzed the results were recorded as against the ASA positivity.

Index Terms- Antisperm antibodies, Infertility

III. RESULTS

I. INTRODUCTION

Infertility was observed from ancient days¹ the intensity is raising steadily day by day². In recent years it reaches to an alarming level³. Various etiological agents such as microbial infections, immunological interference, physical and physiological problems may contribute for this⁴ family destructive process.

Though there were many causes for this condition one important factor being the immunological involvement⁵. The known mechanism noted was the sequestered nature of sperm antigens when contacted with the immunocompetent cells of the individual began to produce the antisperm antibodies. This autoimmunity leads to the destruction of the sperm cells and its functions.

The process of formation of ASA was favored in certain clinical and surgical procedures⁶. Apart from this it was suspected that there were other factors such as the tentionable jobs, and the environment in which the individual work may also influenced the ASA formation⁷. Hence this study was designed to explore the relationship of occupation and environmental influence in the formation of antisperm antibodies.

Age wise distribution of infertile cases showed more numbers (175/402) in the age group of 36-40 years. Next higher number was seen (88/402) in the age group of 31-35 years. Least numbers of infertile cases were observed in the age group of 25-30 years shown in Table-1.

Among the 402 infertile males 56 were positive for anti sperm antibody (13.7%) shown in diagram-1. Analysis of ASA in respect to the profession of the infertile male cases showed a highest incidence in gold smiths 20/56 (35.7%) this was followed by the driver profession 18/56 (32.1%). Results in other groups such as business men 9/56 (16%) and industrial workers 4/56 (7.1%). School teachers were also showed ASA positivity but to a fairly low level of 8.9%.

Due to stress and strain in their work spot some people use to smoke use Jardha or Bettle Nut and some people consume alcohol regularly. Among the 56 positive cases 26 of them were smokers, 22 of them used Jardha and 8 of them were alcoholics. In case of obesity among the 56 ASA positive cases 48 of them were obese only 8 had normal weight.

II. MATERIALS AND METHODS

Materials

A total number of 402 infertile male patients who were attending infertility clinic of Rajah Muthiah Medical College Hospital Annamalai Nagar Chidambaram were used as study population. Blood samples were collected from patients of 25-50

Table: 1 Age wise distribution of ASA in infertile men

Age groups in years	No. of patients	Percentage
25-30	8	1.99
31-35	88	21.89
36-45	175	43.53
41-45	74	18.40
46-50	57	14.19
Total	402	100

Fig. 1 Prevalence of ASA positivity

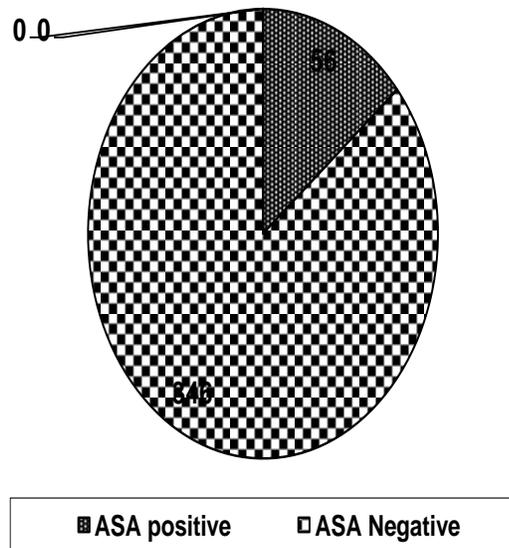
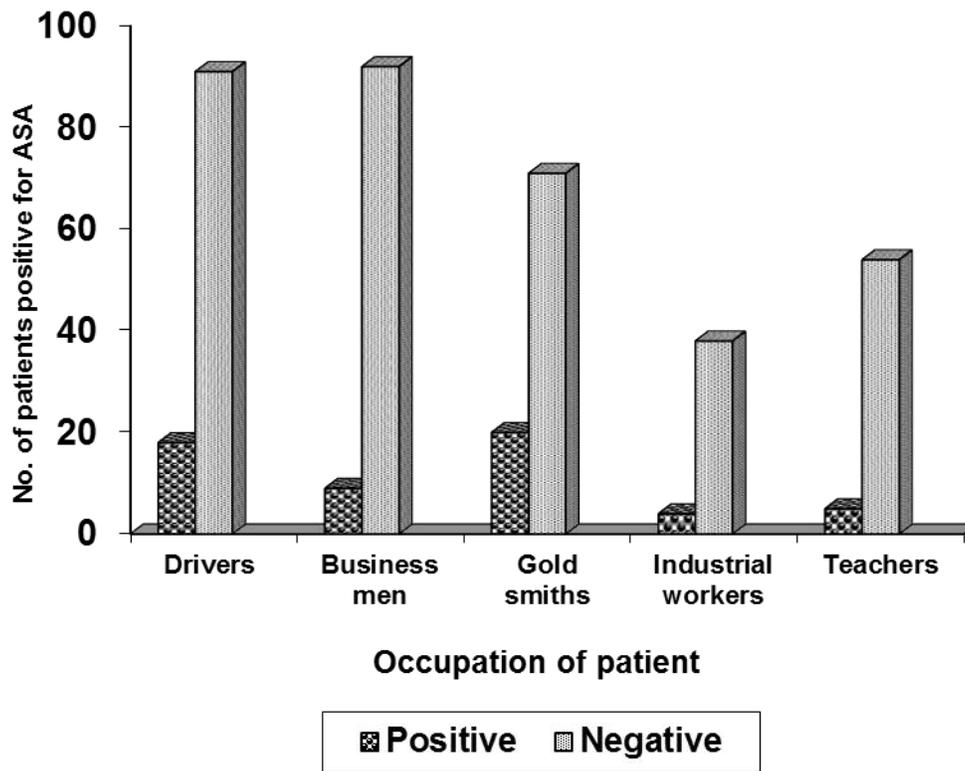


Table: 2 Occupation and ASA positivity

Occupation	ASA positive	ASA negative	Total
Drivers	18	91	109
Business men	9	92	101
Gold smiths	20	71	91
Industrial workers	4	38	42
Teachers	5	54	59
Total	56	346	402

Fig. 2



IV. DISCUSSION

Twenty percent of all cases where the male is the only contributing factor to infertility can be corrected positively by life style⁸. Sperm cells are protected from immune system by a natural protective mechanism called the blood-testes barrier⁹. If by any means breaches this barrier then the immune system has access to sperm the sperm behave as an antigen and antibodies are formed¹⁰. ASA positivity in fertile male was seen in 56 cases out of 402 tested. Among the various occupational groups tested gold smiths were top in the list with 35.7% ASA positivity. This could be explained that the gold smith who sat all the time near the flame while at work. Goldsmiths referred in the present study are exposed not only to radiant heat but also to potentially toxic fumes¹¹.

Similarity the driver community was also closer to the hot engine during their long duty time. Exposure to heat may lead to low sperm count, reduced motility and variant morphology¹². Heat intense occupations such as bakers, cooks welders and drivers are potentially exposed to elevated radiant heat and this may impair spermatogenesis or possibly epididymal function¹³.

When speaking about business men (shop keepers) they had no active work and were held at one spot without having much of physical movements showed 16% of ASA positivity. ASA positivity was also observed among the industrial worker (7%) though they were active workers the industrial pollution may account for the infertility. Protection of the workers through provisions of personal protective will go a long way in reducing

the exposure to industrial pollution of the workers and preserve their reproductive ability.

Occupational environment may also affect significantly to a greater number of people. Toxicant encountered in specific occupational settings as they come in to contact with chemicals in a variety of work including direct exposure, industrial emissions of pesticides and their residues, ingested foods or contaminated water¹⁴.

There was significant of delay in conception following male exposure to textile dyes, plastic manufacturing and welding. Similarly men who involved in unpacking or handling of antibiotics had a significant association with delayed pregnancy¹⁵. Other groups in the community among the educated population affected was the school teachers particularly teaching 10th and-12th Standards showed ASA positivity of (8.9%).The stress and strain they undergo on every year due to public examination may account for their mounting tension in life. Further the processing of personal data collected by questioner of their habits revealed that smoking and other forms of nerve stimulating agents, and the use of alcohol seem to be the aggravating factors in the production of ASA.

Smokers sperm count are an average of 13-17% lower than non smokers. A study on smokers who were followed for 5 to 16 months after stopping reported that their sperm counts rose 50 to 800% suggesting that toxic chemicals in the smoke are responsible and any reduction in the sperm count is reversible¹⁶. Male smokers have an increase in sperm abnormalities there by suggesting a mutagenic effect¹⁷. Cigarette smoking may alter hormone levels in males¹⁸.

Interestingly limited studies suggested that to be mutagenic to human spermatozoa and lead to cancer, birth defect and genetic disease in offspring¹⁹. Excessive alcohol intake is associated with direct testicular toxicity²⁰. A large 50% reduction in conception was found in experiments. Test animals were given intoxication doses of alcohol 24 hours prior to mating. Alcohol reduces fertilization success²¹.

Different studies reported that obesity was significantly associated with erectile dysfunction. It was found that heavier a man was lesser the testosterone he produced and the lack of their essential male hormone intern it caused erectile dysfunction. The low level of testosterone is also associated with abnormalities in blood flow to the penis²².

Further obesity in males was recently proposed to constitute an important role, approximately 30-40% infertility cases can be attributed to problems with male partners²³. Present study results also confirm the previous findings. A maximum number of infertile cases were obese. In men of erectile dysfunction 79 % of the patients are found to be more weight or obese. This can be explained in part by elevated levels of several pro inflammatory cytokines in obese individuals²⁴.

Report by Hammound revealed that obesity is associated with altered spermatogenesis and erectile dysfunctions²⁵. The present study report showed among the ASA positive men 85.7% were obese. Therefore the obesity was found as an important risk factor in infertility.

V. CONCLUSION

The study report revealed that the level of ASA was highest in gold smith population. It was followed by the driver community. It clearly showed that the environment may play a role in infertility and also the production of ASA. Pollution free surroundings, healthy physical activity and peaceful working atmosphere are essential for normal fertility. Obesity was the most important risk factor observed in the infertile population.

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AUTHORS

First Author – Dr. JOSEPH PUSHPA INNOCENT, M.sc, PhD, Prof of microbiology, Department of Microbiology, Karpagavinayaka institute of medical sciences and research centre, Madhuranrhagam, Chennai, India, E-mail : josephmary2k9@gmail.com

Second Author – Dr.suseela, MBBS,MD,PhD,, prof of microbiology, Department of Microbiology, Rajah Muthiah Medical College, Annamalai University, Chidambaram, India.

Third Author – Dr.G.prathiba, M.sc, PhD, Reader in microbiology, Sathyabama University Dental College and Hospitals, Chennai -119, India., E-mail: brightstart2011@yahoo.com

Correspondence Author – Dr.G.prathiba, M.sc, PhD, Reader in microbiology, Sathyabama University Dental College, Chennai - 119, India. E-mail: brightstart2011@yahoo.com. Cell no: 9566107279.