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MALE GENITOURINARY TRACT INFECTIONS RELATIONSHIP WITH INFERTILITY: A BACTERIOLOGICAL STUDY.

DR. RAHUL G. WADILE*

Department of Microbiology, JMF'S A.C.P.M. Medical College, Dhule, Maharashtra, India – 424001.

ABSTRACT

BACKGROUND:- Asymptomatic bacteriospermia, seminal tract infections can be associated with decrease sperm count and reduces fertility, hence one of the most important causes of male infertility worldwide.
SETTINGS AND DESIGN:- Semen and Mid stream urine samples were collected under aseptic precautions, inoculated on agar mediums & incubated aerobically at 37º C for 24 hrs. Biochemical reactions were done for identification of isolated organism. Antibiotic sensitivity tests were done by modified Kirby Bauer disc diffusion method
RESULTS:- The organisms were isolated from 83 (78.30%) seminal fluids and 75.90% urine of infertile patients. The most common organism isolated was *E. coli*, 17.58% & 25.40%. in cultures of semen & urine respectively. Ciprofloxacin, Ceftriaxone are the first choice of treatment.
CONCLUSIONS:- Genitourinary infections one of the causes of infertility. Despite of extended diagnosis efforts for detection of most infectious diseases, the causal relationship between infection and male infertility has not established.

KEYWORDS:- Blood agar, E. coli, Genitourinary infections, Male infertility.

DR. RAHUL G. WADILE
Department of Microbiology, JMF'S A.C.P.M. Medical College,Dhule, Maharashtra, India – 424001.

Corresponding author

INTRODUCTION

Infertility is unprotected sexual intercourse without establishing a successful pregnancy. Conception normally achieved in 80 – 90% couples within this period using no contraceptive measures.[1, 2] Male genitourinary tract infection is one of the most important causes of male infertility worldwide. Genital tract infection and inflammation have been associated to 8 – 35% of male infertility cases.[3, 4] Genital tract infections is the most important cause of male infertility affecting not only sperm cell function but also the whole spermatogenesis.[5, 6] Asymptomatic bacteriospermia may play a major role.[7, 8] While certain cases of male infertility are due to anatomical abnormalities such as varicocele, ductal obstructions or ejaculatory disorders, seminal tract infections other than sexually transmitted diseases and tuberculosis.[9, 10] Moreover environmental toxins, drugs such as cimetidine, smoking and alcohol use can be associated with decrease sperm count and reduces fertility.[11] The aim of this study was the bacteriological study of genitourinary tract infection relationship with male infertility and antibiotic sensitivity of the isolates which used for treatment.

MATERIALS AND METHODS

106 patients (age 20 – 45 years) attending to infertility clinics at various hospitals in Dhule city for the 6 months period. Medical and sexual history was taken from each patient; a history of testicular trauma / injury, bacterial and viral infections, surgery in male genitourinary tracts and history of medication was taken. Seminal sample were collected by masturbation in the sterile container, under aseptic precautions after 3 days abstinence. The semen was allowed to liquefy completely and then spermatic count according to World Health Organization (WHO) [Table 1].[12] Semen samples inoculated on Blood agar and MacConkey's agar, Chocolate agar then incubated aerobically at 37° C for 24 hrs. Mid-stream urine samples were collected for culture 2 – 3 days after semen collection, but never on the same day. The urine samples were processed in a same way of semen culture. The cultures were examined for evidence of growth. Subculture on solid media and biochemical reactions were done for identification and confirmation of the isolated organism Antibiotic sensitivity tests were done against the isolates by modified Kirby Bauer disc diffusion method by using antibiotics like Ampicillin (AMP), Amoxycillin (AMX), Augmentin (AUG), Erythromycin (E), Ceftriaxone (CTX), Gentamycin (G) and Ciprofloxacin (CIP).

RESULTS

106 infertile male cases were investigated. Epididymal tenderness was presented in 83 (78.39%) patients including a significant number of pus cells in the semen (> 10 cells / high power field). 29 (27.36%) patients had azoospermia (spermatic count were zero), 67 (63.20%) patients had an oligospermia (spermatic counts were below 40 million / ml), 10 (9.44%) were normal (spermatic counts were above 40 million / ml). The organisms were isolated from 83 (78.39%) seminal fluids of infertile patients.

DISCUSSION

Male urogenital tract infection is an important cause of infertility. The etiological role of infections in male infertility has been paid attention in recent years. Asymptomatic bacteriospermia may play a major role.[3, 7, 8] Infectious processes may lead to deterioration of spermatogenesis, impairment of sperm function and obstruction of seminal tract.[4] Despite major advance in diagnostic work of infertile male, the etiology of testicular failure remains undefined in about 50% of cases and is referred to as idiopathic infertility.[13] The results of our study shows that, 21.70% infertile patients have no growth on the semen culture while remaining 78.30% have 1 or more types

of micro – organisms were isolated. A total isolates of 91 from 83 infertility patients, this is in agreement with Turek et al.[2] and Keck et al.[10] The most common micro – organisms were isolated from the seminal fluid cultures were *E. coli* (17.58%) and *S. aureus* (16.48%) [Table No. 2], this is in agreement with other studies.[14, 15] The urine cultures showed growths in 75.90% of the infertile males while in the 24.10% of urine have no growth. The common isolates were *E. coli* (25.40%), *Klebsiella species* (20.63%), *S. aureus* (19.05%), this is in agreement with Mogra et al.[14] [Table No. 2]. Out of 106 cases of infertile males, 29 (27.36%) had azoospermia while 67 (63.20%) had oligospemia and 10 (9.44%) had normal spermatic count, this is in agreement with Mogra et al.[14] Infection of male genitourinary tract may contribute to infertility by adversely affecting sperm function, damaging sperm, hampering their motility, altering the chemical composition of seminal fluid and cause anatomical obstruction.[16, 17] The organisms are identified to cause urethritis, which is not often complicated by infections of other parts of the genital tract, including the testes and in the way cause male infertility. The isolated micro - organisms were sensitive Ciprofloxacin, Ceftriaxone, Gentamicin, Augmentin, so can be used as the first choice of treatment and other antibiotics such as Amikacin & Ampicillin have moderate effect.

Table No 1
The WHO normal values for the semen analysis.

Parameters	Normal values
Volume	> 2 ml
pH	7.2 – 8.0
Sperm concentration	> 20 million / ml
Total sperm count	> 40 million per ejaculation
Motility	> 50%
Morphology	> 30% normal forms
Pus cells	< 10 / high power field

Table No 2
The frequency of micro – organisms isolated from semen and urine samples.

Micro – organisms	Semen sample	Urine sample
Gram positive organisms		
Staphylococcus aureus	15 (16.48%)	12 (19.05%)
Coagulase negative staphylococci species	13 (14.29%)	11 (17.46%)
Enterococcus faecalis	8 (8.80%)	3 (4.76%)
Candida species	5 (5.50%)	2 (3.17%)
Gram negative organisms		
Escherichia coli	20 (21.98%)	16 (25.40%)
Klebsiella species	16 (17.58%)	13 (20.63%)
Proteus species	6 (6.60%)	3 (4.76%)
Pseudomonas species	5 (5.50%)	2 (3.17%)
Serratia species	3 (3.30%)	1 (1.59%)
Total	91	63

Table No 3
Antibiotic sensitivity pattern of bacterial isolates (%).

Organisms	AMP	AMX	AUG	AK	E	CTX	G	CIP
S. aureus	41	43	90	38	35	94	69	65
CONS	74	57	87	55	50	75	78	76
E. faecalis	58	52	79	73	43	47	55	64
E. coli	59	40	66	78	31	68	73	93
Klebsiella species	68	49	83	81	5	85	70	92
Proteus species	53	51	72	70	37	78	76	85
Pseudomonas species	60	47	79	68	54	76	75	83
Serratia species	78	62	81	52	72	79	73	80

Ampicillin (AMP) Amoxycillin (AMX) Augmentin (AUG) Erythromycin (E), Ceftriaxone (CTX) Gentamycin (G) Ciprofloxacin (CIP).

CONCLUSION

Male infertility is a medical problem of couples and genitourinary infections one of the causes of infertility. It is necessary to determine the causative agent of infection before the initiation of treatment. However, despite of extended diagnosis efforts for detection of most infectious diseases, the causal relationship between infection and male infertility has not established.

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