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The Prevalence of Prostatitis and Bacterial Isolate from Patient's Semen in Okigwe and Umuahia

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Abstract: The prevalence of Postatitis and bacterial isolates from patient's semen was carried out in Okigwe L.G.A in Imo State and Umuahia North L.G.A in Abia State. The patients examined were those referred to Healing Cross Hospital Umuahia and God Heals Hospital Okigwe for Urological cases. A total of 1000 patients visited the two hospitals. Due to their ages and health challenges, those patient without urinary catheters and those below the age of 60 years were asked to produce their semen specimen. A total of 388(38.8%) semen specimen were received from the two locations with 70 from Okiwe and 318 from Umuahia. From Okigwe 70 semen specimens was cultured. 52 specimen had bacterial growth, with *E.coli* the highest isolate of 20 (38.0%). In Umuahia, 318 patients were able to get their semen, 220 (69.2%) had growth, with *E. coli* having the highest bacterial isolate of 70(31.8%) while *S. faecalis* had the lowest bacterial isolate of 18 (8.1%). Farmers, applicant and unemployed patients had the highest bacterial growth while student had the lowest growth. Due to lack of proper awareness and educational background, the rural dwellers had the highest bacterial isolate than the urban dwellers. Prostatitis can be managed at early stage and reduce the chance of getting bacteria in semen which may lead to infertility and inability to urinate. Generally, the prevalence of PSA and bacterial pathogens which were associated with increase in age, low social-economic status and poor dwelling environment were found as demographic risk factors to aggravating Prostatitis. This calls for thorough/proper medical checks for men of 40 years and above to avoid the chances of developing Prostatitis and it's complications of using urethral catheter. The later stages of Prostatitis have been associated with inability to urinate and infertility which could have been avoided by proper diagnosis and medication.

Keywords: prostatitis, bacterial, semen and infertility.

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Introduction

The human prostate is a part of the male reproductive system. It is located anterior to the rectum, distal to the urinary bladder and wraps around the urethra. Due to its anatomical position, infectious agents can reach the prostate mainly through the urine or as ascending sexually transmitted infections. The prostate is the major accessory sex gland of the males, it provides exocrine function, but it has no established endocrine or secretory functions. Its

secretion provides fluid that comprises 15% of the ejaculate. These secretions produce a volume-expanding vehicle for sperm, yet no specific reproductive function has been identified. Assessment of seminal parameters is helpful in investigation of male infertility factor, genital tract infections and pathologies. Practicing a routine semen analysis is the first step towards determination of the influence of genital pathophysiology on the reproductive capacity of male, even then certain parameters might not be of any clinical significance (World Health Organization, 2010). The men with prostatitis have troubles with mood, personality and sexuality (Collins *et al.*, 2001; Mehik *et al.*, 2001). The sexual problems are cause due to loss of libido, erectile dysfunction and decreased sexual activity. Psychical disorders include anxiety, depression, paranoia, compulsions, affect liability, weak masculine identity and features suggesting of borderline, narcissistic and alexithymic personalities. Their increased stress is also reflected in heightened levels of awakening cortisol.

Materials and Methods

Ethical Clearance

The clearance to obtain specimens and work with the people in the various hospitals was given by the Heads Medical Directors in charge of the locations. After submitting the clearance letter from the Abia State University, Uturu ethical clearance committee to the various hospitals.

A total of 1000 people were sampled in the two locations:- 800 were screened from Umuahia while 200 were screened from Okigwe. Their ages range from 21- 80 and above with 7 class intervals and they were placed in age bracket of 10 intervals (eg, 21-30, 31-40 etc).

Media Preparation

The culture media were obtained in the commercially prepared (hydrated) form. Preparation of each medium was done according to the manufacturer's specifications. The specified quantity of the media were dissolved in specified volume of distilled water and sterilized by autoclaving at 121^0C and 15 p.s.i for 15 minutes in well stopper conical flasks. The sterilized media was allowed to cool to about 45-50^0C before dispensing into pre-sterilized petri-dishes and allowed to gel on flat surface.

Specimen Collection for Semen Analysis and Semen Culture

- The patients were told to wash their hands and penis with soap, to reduce the risk of contamination of the specimen with commensal organisms from the skin. A little urine is also advice to be passed.
- The soap on the penis was rinsed, hands and penis were dried with fresh disposable towel.
- The semen specimens were collected after a minimum of 3 days and a maximum of 7 days of sexual abstinence.
- It was obtained by masturbation and was ejaculated into a clean, wide-mouthed plastic container.
- The specimen container was kept at ambient temperature, between 20°C and 37°C, to avoid much changes in temperature that could affect the spermatozoa.
- It was labelled with the patient's name, identification number, the date and time of collection (WHO, 2010).

Semen Culture

- ✓ Culture of seminal fluid was done within 1 hour of collection.

- ✓ The seminal fluid was cultured using Blood Agar, and MacConkey Agar at 37°C for 24 hours. The cultures were examined for growth. The isolation and identification of bacterial isolates were carried out in accordance with (WHO, 2010).

Result

The bacterial isolates from patient's semen in Okigwe and Umuahia was shown in Fig 1: In Okigwe, due to age and their health challenges cause because of prostatitis, semen sample were collected from the ages of 60 years below.

Only 70 patients were able to produced their semen and 52 had growth. *E. coli* had the highest bacterial isolate of 20(38.0%). In Umuahia, due to their age and health challenges, semen specimen where collected from 60 years below.

Only 318 patients were able to produce their semen out of the 320 patients that was asked to produce their semen specimen while 2 patients could not produce their semen specimen only 220(69.1%) yielded growth. *E. coli* had the highest bacterial isolate 70(31.8%) while *S. faecalis* had the lowest bacterial isolate 18(8.1%).

The occupational influence on bacterial isolation from semen specimen from Umuahia and Okigwe was shown in (figure 3). In Okigwe, the farmers and applicant and unemployed had the highest bacterial growth of 17 (90.0%) while student and civil and public servant had the lowest bacterial isolate of (60.0%).

In Umuahia applicant and unemployed had the highest bacterial growth of 94.1% while student had the lowest growth 33.3%. Figure 4: The residential settlement-related distribution of bacterial isolation from semen specimen from Umuahia and Okigwe. In Okigwe, rural dwellers had the highest bacterial growth of 32(8.0%) while urban dwellers had the lowest growth of 20(66.6%). In Umuahia, the rural dwellers had the highest bacterial growth of 140 (77.7%) while the urban dwellers had the lowest growth of 80(57.1%).

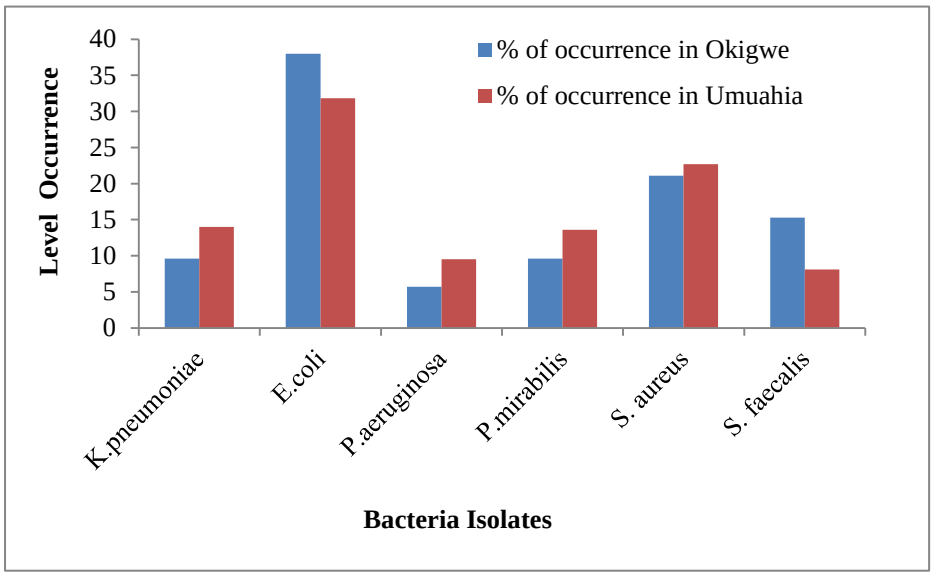

Figure 1. Bacterial isolates from semen specimens of Prostatitis patients (Uncatheterized) from Okigwe and Umuahia below the age of 60 years

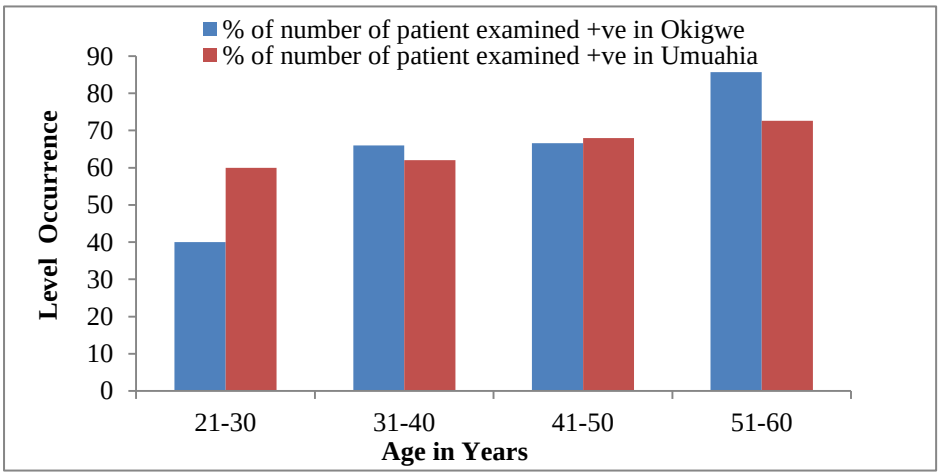

Figure 2. Distribution of bacterial species isolated from semen specimens of Prostatitis patients from Okigwe and Umuahia according to age

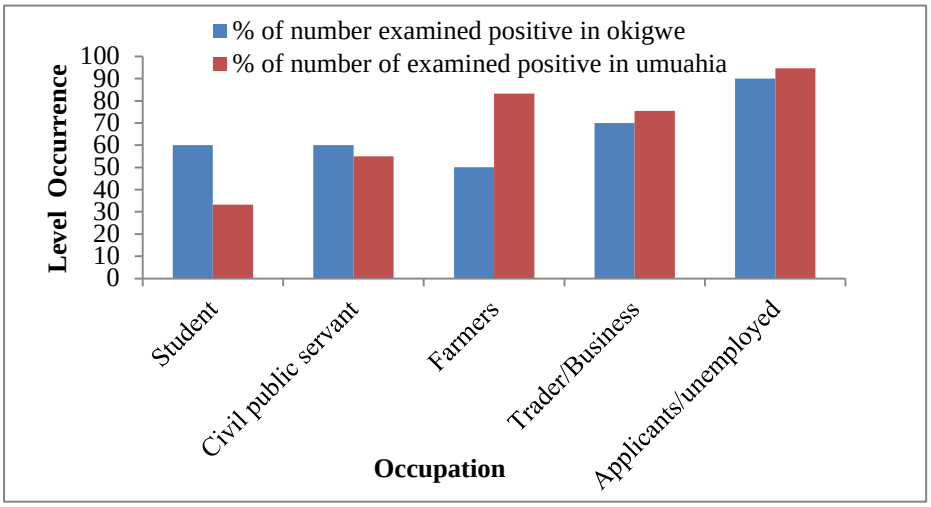

Figure 3. Occupational influence on bacterial isolation from semen specimens from Okigwe and Umuahia

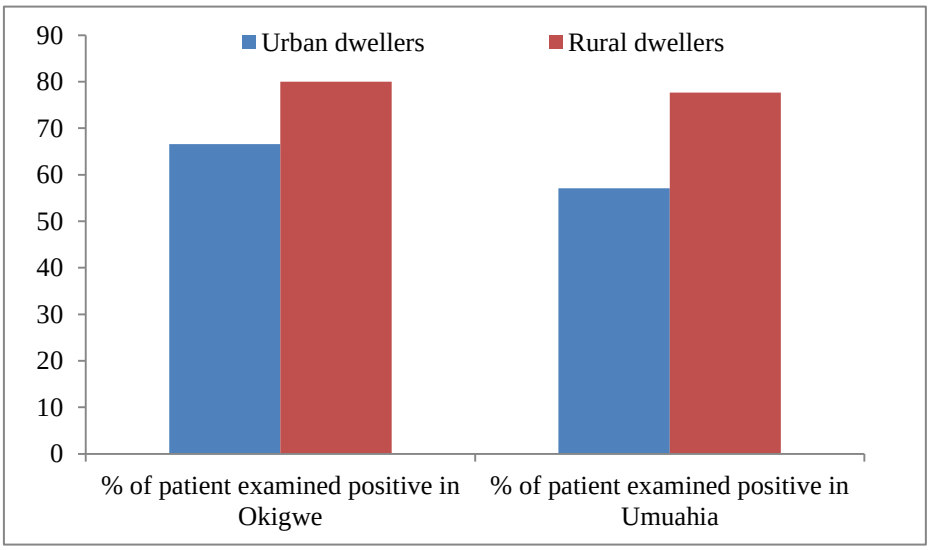

Figure 4. Residential settlement-related distribution of bacterial isolation from semen specimens from Okigwe and Umuahia

Discussion

This research was carried out to know the effect of Prostatitis and bacterial organisms on the patient's semen. From this research, due to the patient's age and health challenges, semen specimen where collected from the age of 60 years below. A total of 272(70.1%) bacterial growth of *E. coli*, *S. faecalis*, *Klebsiella*, *S. aureus* *Protus* *and P. mirabilis* were isolated from the two locations. In Okigwe, 52(74.2) had bacterial growth with *E. coli* 20(38.4) showing the highest organism isolated followed by *S. aureus* 11(21.1), *S. faecalis* 8(15.3), *Klebsiella* and *Protus* were 5(9.6) and the lowest was *Pseudomonas* 3(5.7) while in Umuahia, out of 318 semen specimens that was cultured 220 had bacterial growth with *E. coli* 70 (31.8) followed by *Staphylocuccus* 50(22.7), *Klebsiella* spp 31(14.0), *P. mirabilis* 30(13.6), *Pseudomonas* spp 21(9.5) and *S. aureus* was the lowest with 18 (8.1).

E. coli, the most frequently isolated and common cause of non-sexually transmitted epididymo-orchitis, is involved in 65–80% of total acute or chronic prostatitis cases. *E. coli* may therefore be implicated in the genesis of infertility. Golshani *et al.*, (2006) while studying microbiology of semen sample of infertile men and evaluating the effects of bacteriospermia on semen parameters found *E. coli* to be the most common bacteria which negatively influence sperm motility and morphology. They have also reported the negative influence of *E. coli* on sperm motility after mixing sperm and bacteria *in vitro*. *E. coli* rapidly adheres to human spermatozoa *in vitro*, resulting in agglutination of spermatozoa. A profound decline in motility of spermatozoa is evident over time due to severe alterations in sperm morphology. This research is in line with Kalpana *et al.*, (2016). Moretti *et al.*, (2009) who stated that the presence bacteria in semen may affect fertility in several ways including damage of spermatozoa, hampering their motility and altering the chemical composition of the seminal fluid.

From the age distribution of bacterial isolates from patient's semen in the two locations showed that 51- 60 years of ages had the highest bacterial isolates. In Okigwe, the age group of 51-60 years had 30(85.7) of bacterial isolates while 21-30 had the lowest bacterial growth of 2(40.0). In Umuahia, the age of 51-60 also had the highest bacterial growth of 109(72.6) while 21-30 years of age had the lowest of 12(60.0). Prostatitis affects men of all ages but tends to be more common in men over 50 years and Saad *et al.*, (2013) observed that male genital tract infections are an important and correctable etiology of male infertility. Up to 12% of male infertility cases are caused by male genital tract infection (Kalpana *et al.*, 2016).

The social economic status related from semen examined from Umuahia and Okigwe showed that in Okigwe the farmers and applicant/unemployed statues had the highest bacterial isolate of 17(90.0) while the student had the lowest of bacterial growth (60.0). In Umuahia, it was also observed that applicant/unemployed status had the highest occurrence of (94.1) while the students had the lowest bacterial growth of (33.3).

In the dwelling related distribution of patient's semen in Umuahia and Okigwe were observed that rural dwellers were found be highly affected with bacterial isolates of 32 (80.0) and 140(77.7) while the urban dwellers was found to be seen with lowest pathogen of 20(66.6) and 80(57.1). This findings was in line with Said *et al.*, (2009) and Jungwirth *et al.*, (2015) who observed the difference between the urban and rural dwellers, which lack of awareness and cost of going to the hospital attributed to and Ogwuegbu *et al.*, (2018) who said generally, that the prevalence of PSA associated with increase in age, low social-economic status and poor dwelling environment were found as demographic risk factors to aggravating prostatitis.

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