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Observed variations of Plasma Procalcitonin Amongst Sexually Active Males With Suspected Bacterial-Urogenital Infection In Yola Metropolis

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ABSTRACT

Background: Male urogenital infection in Nigeria has increased due to alarming rise of unprotected sex amongst the sexually active males in Nigeria. Most of these case leads to a limiting advanced disease state such as kidney infections, bacteropsermia/infertility and reinal failure. **AIM:** To study the elevated serum Procalcitonin levels on patients with bacterial urogenital infections as an adjunct of bacterial-fungi-viral urogenital infections for diagnosis/prognosis and antimicrobial monitoring. **PATIENTS and METHODS:** The study group cut across adults from the ages of 20 years and above, 40 males who were suspected to have urogenital infection and 40 who were confirmed cases of urogenital infections those with suspected urogenital infections and those with confirmed urogenital infections. Using standard microbiological techniques urine and urethral swabs were taking and proper cultural techniques were carried out to isolate the bacterial/Fungi origin of infection, blood samples were collected from patients with suspected and confirmed urogenital infections for further analysis of the Procalcitonin ratio. **RESULT:** a total of 40 suspected males with signs and symptoms of urogenital infections where included in this study, a microbiological analysis was carried out on MSU(midstream urine clean catch) and urethral swab, and seminal fluid analysis, 40% yielded growth of

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gram *Staphylococcus aureus* and CoNs, 22.5% yielded growths of *Escherichia coli*, *Proteus mirabilis*, *Acinetobacter* spp, *Klebsiella oxytoca* while 15% had fungi/Parasitic origins, (*Candida albicans* and *Trichomonas vaginalis*) 22.5% showed no significant growth. The mean PCT ratio across the infectious agents were, bacterial origin (0.4-1.1 CI 0.34-0.62) fungi/parasitic origin (0.3-1.0 CI 0.28-0.56) Conclusion: although there was no remarkable difference between the confirmed cases of urogenital infection and suspected cases this showed the accuracy of PCT and its use. The reasonable increased levels of PCT in urogenital infections may serve as prognosis for asymptomatic cases which often result to infertility, although most of the suspected cases were in the hospital wards either with prolonged chronic renal failure or urinary tract infection this poses an interest to link clinical isolation of pathogenic organism and a symbiotic relationship of serologic PCT monitoring.

Keywords: Procalcitonin, Urogenital Infections, Infertility

INTRODUCTION

Male Urogenital Tract Infections is one of the most important causes of bacterospermia and male infertility worldwide. Genital tract infection and inflammation have been associated to 8-35% of male infertility cases [1,7,8]. Asymptomatic bacterospermia may play a major role [2,9]. Male accessory sex glands infection is a major risk factor in infertility [5]. The significant of Pathophysiology of bacterospermia has been discussed in recent years. Some possible Pathomechanisms of the development of infertility linked with infection are considered: direct effect on sperm function (motility, morphology, etc),

deterioration of spermatogenesis, auto-immune processes induced by inflammation and dysfunction of accessory sex glands [2,8]. Hence assessing the PCT levels as a base line for diagnosis early diagnosis so as to probe the pathogenicity/host pro hormone response and the microbiology investigation of males can be useful to detect the male urogenital tract infection, especially asymptomatic infections. The aim of this study was to investigate if there a significant increased levels of PCT as a baseline of diagnostic measures of urogenital. Efforts have been made to develop new biomarkers that accurately predict sepsis occurrence in neonatal patients. Among them, serum procalcitonin (PCT) is one of the most promising [6]. One recently published study showed that daily monitoring of PCT could allow the medical staff to identify patients with the highest risk of mortality [7].

PATIENTS and METHODS

The study was conducted from January 2011 to April 24th 2011 using males who present themselves for fertility testing or suspected urogenital infections in a Teaching Hospital. This study was approved by the Local Ethics Committee.

Blood samples were obtained by venipuncture before processing using the BACTEC system, which is based on standard aerobic and anaerobic media coupled with the 9240 automate (Becton Dickinson, Franklin Lakes, NJ, USA). Bacteria identification was based on standard methods. The onset of bacteremia was defined as the day when the first positive blood culture was obtained. Bacteremia was considered as nosocomial if the onset occurred at least 48 hours after ICU admission.

The Kryptor® immunoassay was used according to the manufacturer's instructions (Brahms, Hennigsdorf, Germany). The functional sensitivity of the assay is 0.06 ng/mL. Patients were excluded

Table 1: Occurrence of Bacteriuria and age profile of Asymptomatic females.

ORGANISM (n)= 1105	%OCCURRENCE	AGE PROFILE (YRS)	PUS CELLS
Escherichia coli (n)=350/1105	31.6	18-35	>5 CELLS
Klebseilla spp (n)=260/ 1105	23.5	18-30	>5 CELL
Staphylococcus aureus (n)= 210/1105	19.0	18-30	>5 CELLS
Enterococcus faecalis (n)= 180/1105	16.2	18-27	>5 CELLS
Acinetobacter spp (n)=105/ 1105	9.5	18-35	>5 CELLS

Table 2 showing procalcitonin level across the urogenital infectious agent for the suspected urogenital cases

organism	PCT levels ng/ml	P
Bacterial		
Gram positive organism(Staphylococcus aureus, CONS)	0.6(0.4) n=16	0.005
Gram Negative Organism(E.coli, K. oxytoca, Acinetobacter spp, Proteus mirabilis,)	1.0(0.7)n=9	0.008
Fungi Origin (Candida albicans	0.4(0.4)n=4	0.006
Parasitic Origin(T.vaginalisa)	0.8(0.6)n=2	0.004

Key: PCT; procalcitonin, n; total number, CoNs; coagulase negative Staphylococcus

from further analysis if the PCT measurement was not performed within the 12 hours following the blood sampling due to the risk of a false-negative result.

Statistical Analysis

Values are expressed as mean \pm standard deviation (SD), unless otherwise stated.

Results

over the study period, the PCT levels was taken from each male that presented himself either to the fertility clinic or for laboratory confirmation of urogenital infection, patients who were confirmed cases of urogenital infections were used as baseline comparison, although there was not much significant difference between the two, there was a significant rise of PCT levels in men with chronic untreated urogenital infection, most males who were asymptomatic did not show much difference in their PCT ratio with suspected urogenital infections (1.1(0.8)ng/ml n=40) and confirmed cases (1.8(1.0)ng/ml n=40) P=0.008, this is shown in table 1.

Microbiological analysis was carried out on MSU (midstream urine clean catch) and urethral swab, and seminal fluid analysis, 40% yielded growth of gram Staphylococcus aureus and CoNs, 22.5% yielded growths of *Escherichia coli*, *Proteus mirabilis*, *Acinetobacter spp*, *Klebsella oxytoca* while 15% had fungi/Parasitic origins, (*Candida albicans* and *Trichomonas vaginalis*) 22.5% showed no significant growth. The mean PCT ratio across the infectious agents; bacterial origin (0.4-1.1, CI 0.34-0.62), fungi/parasitic origin (0.3-1.0, CI 0.28-0.56) Table 2.

CONCLUSION

The significant rise is not so visible but with patient who have had prolonged urogenital infection showed remarkable rise in PCT levels, it is also noticed that patients who suffered from

Gram Negative origins of infections showed a remarkable rise of PCT levels this only brings more light to the pathogenic virulence of most Gram Negative organism

Although much work was not done to ascertain virus origins of urogenital infections, conclusively to say that PCT has stood its bench mark as a reliable source of prognosis and diagnosis of bacterial/fungi/parasitic infections.

CONSENT

patients consent was taken and it was under the mode of anonymity

COMPETING INTEREST

There was no competing interest

AUTHORS CONTRIBUTIONS

All authors contributed immensely in the research both as liaison and as thinking caps of this research

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