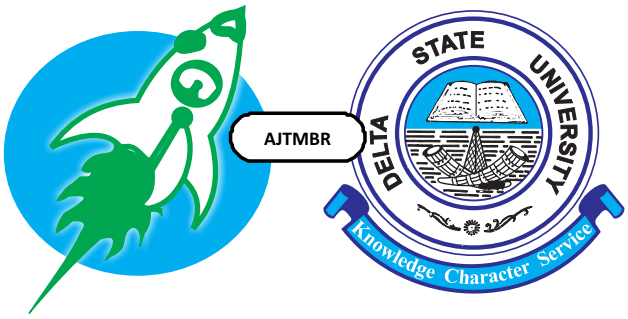
African Journal of Tropical Medicine and Biomedical Research (AJTMBR)



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Focus and Scope

The African Journal of Tropical Medicine and Biomedical Research is a multidisciplinary and international journal published by the College of Health Sciences, Delta State University of Abraka, Nigeria. It provides a forum for Authors working in Africa to share their research findings on all aspects of Tropical Medicine and Biomedical Sciences and to disseminate innovative, relevant and useful information on tropical medicine and biomedical sciences throughout the continent. The journal will publish original research articles, reviews, editorials, commentaries, short reports, case reports and letters to the editor. Articles are welcome in all branches of medicine and dentistry including basic sciences (Anatomy, Biochemistry, Physiology, Pharmacology, Psychology, Nursing etc) and clinical sciences (Internal Medicine, Surgery, Obstetrics and Gynaecology, Dental surgery, Child Health, Laboratory Sciences, Radiology, Community Medicine, etc). Articles are also welcome from social science researchers that document the intermediating and background social factors influencing health in countries of Africa. Priority will be given to publication of articles that describe the application of the principles of primary health care in the prevention and treatment of diseases.

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Table of Contents

Foetal Age Assessment From Femur Length And Biparietal Diameter In Warri, South-south Nigeria.

Eboh DE, Akpovwovwo NN.

ABSTRACT

Introduction: Femur length (FL) and biparietal diameter (BPD) are among the foetal biometric parameters used to estimate the gestational age (GA) of the foetus.

Aim: The aim of this study was to determine the correlation of ultrasound generated gestational age (GA) by measuring FL and BPD with the last menstrual period (LMP) in Warri, South-South Nigeria.

Materials and Methods: Two hundred and thirteen (213) pregnant women who fulfilled the inclusion criteria were recruited into the study. The ultrasound scan measurements of FL and BPD were done in accordance with standard practice. Data were analysed using SPSS 20. Pearson's correlation was used to determine the relationship of GA based on LMP with FL and BPD. T-test was used to determine the differences between the mean GA from LMP, FL and BPD. P value <0.05 was considered significant.

Results: At 12th weeks, calculated GA (from LMP) was 12.43 weeks and mean FL was 12.74mm corresponding with USS GA of 14.11weeks, while mean BPD was 27.43mm corresponding to USS GA of 14.82 weeks. In both second and third trimesters, there were significant positive correlations between, GA based on FL and LMP; GA based on FL and FL; GA based on BPD and LMP; GA based on BPD and BPD; and GA based on FL and BPD. In the second trimester, the mean GAs based on FL and BPD were significantly higher than that based on LMP, but there was no significant difference between the mean GAs based on FL and BPD. In the third trimester, there was no significant differences in the mean GAs between FL and LMP, BPD and LMP, and FL and BPD.

Conclusion: FL and BPD increase as the foetal age increases. This study will be of relevance in obstetrics and gynaecology, and in forensic medical practice.

Key words: Foetal age estimation, last menstrual period, biparietal diameter, femur length, sonography.

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Introduction

Foetal biometry is the term used to describe the measurement of foetal parts, and is a routine ante-natal practice[1]. Traditionally, the last menstrual period (LMP) given by the expectant mother is used as a guide for gestational age (GA) estimation; but this depends on the ability of the patient to accurately recollect.Hence, the need for a more reliable method of estimating gestational age.

Occasionally, in a medico-legal setting in which foetal age is necessary to provide the clue, bones, including femur and skull, may be the only parameters available for identification. Among the bone parameters that are commonly used are: femur length (FL) and Biparietal diameter (BPD) and head circumference (HC)[2]. Studies have been conducted in different populations on the relationship between gestational age based on femur length (GA.FL), biparietal diameter

(GA.BPD) and last menstrual period (GA.LMP)[3-10]. It was observed that the growth of these parameters was accelerated in the last 4 weeks of gestation [11].

Distinct significant correlation has been found between gestational age, and femur length as well as biparietal diameter[12]. These correlations have enabled ultrasound machine manufacturers to create an inbuilt program that helps to estimate the GA from the ultrasound measurements. The aim of this study, therefore was to determine the level of correlation between ultrasound scan generated gestational age (GA) by measuring femur length, biparietal diameter and last menstrual period in Warri, South-South Nigeria, thus providing location specific data on this subject matter. This will be of benefit to the obstetricians, forensic anthropologists, and researchers.

Materials and Methods

All pregnant women who visited the central Hospital Warri for obstetric scan between January and February 2016, formed the study population. Only subjects who gave informed consent, with a history of regular menstrual flow and who were sure of the date of their last menstrual period and pregnancies of 12 to 40 weeks GA, and no foetal growth retardation, participated in the study. 208 pregnant women satisfied the inclusion criteria, and hence participated in the study.

The ultrasound scan measurements of FL and BPD were done by only one radiologist (for uniformity and consistency in measurements) in accordance with the method used by Shohat et al. [13], using a 2D EDAN ultrasound machine with 3.0MHz transducer.

Data analysis was done using SPSS 20. Pearson's correlation was used to determine the relationship between gestational age based on LMP with femur length and biparietal diameter. T-test was used to determine the differences between the mean gestational age from LMP, FL and BPD. P value <0.05 was considered significant.

Result

Four (4) patients at 12th weeks had a calculated GA of 12 weeks and had an average femur length of 12.74mm which corresponded to USS GA of 14.11weeks (Table 1). The mean biparietal diameter of these four patients in the first trimester was 27.43mm corresponding to an USS GA of 14.82 weeks while the calculated GA (from LMP) was 12.43 weeks.

Result showed that in the second trimester, Pearson's correlation coefficient (r) between, GA based on FL and LMP was 0.70 (p=0.001) (Figure 1); GA based on FL and FL was 0.93 (p=0.001) (see Figure 2); GA based on BPD and LMP was 0.68 (p=0.001) (see Figure 3); GA based on BPD and BPD was 0.995 (p=0.001) (see Figure 4); and GA based on FL and BPD was 0.91 (p=0.001) (see Figure 5).

In the third trimester, Pearson's correlation coefficient (r) between, GA based on FL and LMP was 0.758 (p=0.001) (see Figure 6); GA based on FL and FL was 0.990 (p=0.001) (see Figure 7); GA based on BPD and LMP was 0.739 (p=0.001) (see Figure 8); GA based on BPD and BPD was 0.937 (p=0.001) (see Figure 9); and GA based on FL and BPD was 0.965 (p=0.001) (see Figure 10).

Table 2 shows that in the second trimester, the mean GA based on femur length was significantly higher than that based on last menstrual period. Table 3 shows that in the second trimester, the mean GA based on biparietal diameter was significantly higher than that based on last

menstrual period. Table 4 shows that in the second trimester, there was no significant difference between the mean GAs based on femur length and biparietal diameter.

Comparison of the mean gestational ages between, femur length and last menstrual period, biparietal diameter and last menstrual period, femur length and biparietal diameter in the third trimester are shown in Tables 5, 6 and 7 respectively. It was observed that in all, the mean differences were not statistically different.

Table 1. Mean FL and BPD, and GA based on LMP, FL and BPD.

Age (weeks)	N	GA.LMP (weeks)	FL(mm)	GA.FL (weeks)	BPD (mm)	GA.BPD (weeks)
12	4	12.43	12.74	14.11	27.43	14.82
13	0	0.00	0.00	0.00	0.00	0.00
14	0	0.00	0.00	0.00	0.00	0.00
15	1	15.00	17.80	15.14	31.80	15.86
16	2	16.58	25.35	17.65	40.40	18.22
17	2	17.65	**42.40**	**24.93**	**62.80**	**25.79**
18	0	0.00	0.00	0.00	0.00	0.00
19	2	19.22	25.20	18.50	41.20	18.50
20	4	20.50	**38.50**	**22.32**	**53.90**	**22.39**
21	4	21.72	36.93	21.79	51.00	21.61
22	3	22.52	36.40	21.48	51.33	21.43
23	4	23.50	50.35	26.97	66.80	27.51
24	9	24.51	49.73	28.53	65.50	28.00
25	7	25.49	52.33	27.81	68.43	30.40
26	12	26.42	53.03	28.39	70.42	32.00
27	8	27.25	53.61	28.39	72.33	32.45
28	10	28.44	58.20	30.39	75.21	32.35
29	7	29.53	61.34	31.94	79.43	32.59
30	17	30.49	62.82	32.51	81.02	34.01
31	12	31.28	62.34	32.30	80.21	32.35
32	13	32.43	63.26	32.61	80.95	32.59
33	13	33.40	66.09	34.01	84.06	34.01
34	13	34.50	67.48	34.74	85.54	34.81
35	16	35.43	70.48	36.30	88.11	36.13
36	11	36.48	72.36	36.88	88.36	36.96
37	16	37.41	72.37	37.03	91.13	36.71
38	8	38.43	72.05	36.97	90.94	36.86
39	11	39.49	73.65	38.05	92.37	37.13
40	3	40.14	76.00	39.05	95.00	38.81

BPD= Biparietal diameter, FL= Femoral length, LMP= Last menstrual period, GA=Gestational age.

Table 2. T-test between mean GAs based on LMP and FL in the second trimester (N=50).

GA (Weeks)	Mean	SD	Mean difference	T	Df	*p*-Value
LMP	23.37	3.09	2.24	2.759	98	0.007
FL	25.61	4.84				

FL= Femoral length, LMP= Last menstrual period, GA=Gestational age.

Table 3. T-test between Mean GAs based on LMP and BPD in the second trimester (N=50).

GA (Weeks)	Mean	SD	Mean difference	T	Df	*p*-Value
LMP	23.37	3.09	1.77	2.328	98	0.022
BPD	25.14	4.41				

BPD= Biparietal diameter, LMP = Last menstrual period, GA=Gestational age.

Table 4. T-test between mean GAs based on FL and BPD in the second trimester (N=50).

GA (Weeks)	Mean	SD	Mean difference	t	Df	*p*-Value
FL	25.61	4.84	0.47	0.505	98	0.614
BPD	25.14	4.41				

BPD= Biparietal diameter, LMP= Last menstrual period, GA=Gestational age

Table 5. T-test between mean GAs based on LMP and FL in the third trimester (N=158).

GA (Weeks)	Mean	SD	Mean difference	t	Df	*p*-Value
LMP	33.77	3.61	0.55	1.372	314	0.171
FL	34.32	3.50				

FL= Femoral length, LMP= Last menstrual period, GA=Gestational age.

Table 6. T-test between Mean GAs based on LMP and BPD in the third trimester (N=158).

GA (Weeks)	Mean	SD	Mean difference	t	Df	*p*-Value
LMP	33.77	3.61	0.55	1.372	314	0.171
BPD	34.32	3.50				

BPD= Biparietal diameter, LMP = Last menstrual period, GA=Gestational age.

Table 7. T-test between mean GAs based on FL and BPD in the third trimester (N=158).

GA (Weeks)	Mean	SD	Mean difference	t	Df	*P*-Value
FL	34.32	3.50	0.13	0.337	314	0.736
BPD	34.19	3.42				

BPD= Biparietal diameter, LMP= Last menstrual period, GA=Gestational age

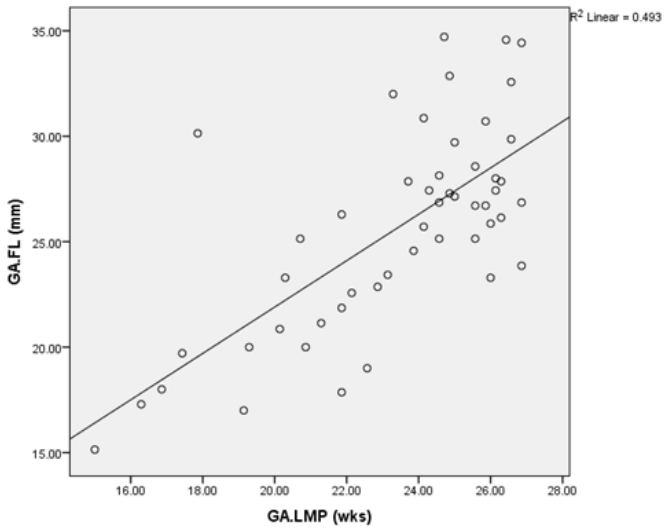

Figure 1. Scatter plot between GA.FL and GA.LMP in second trimester.

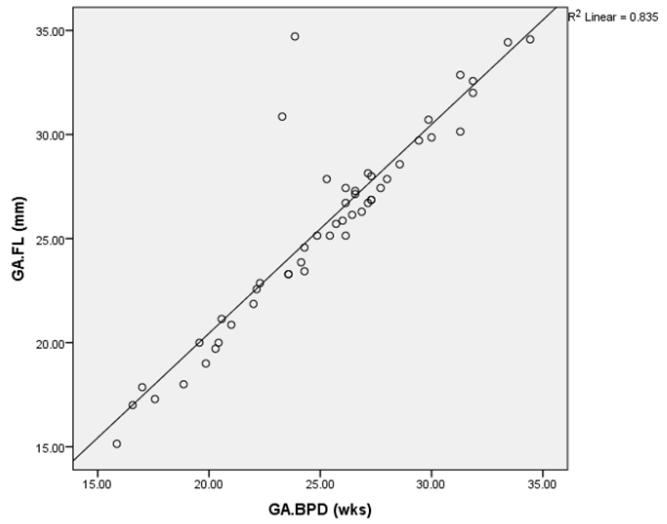

Figure 2. Scatter plot between GA.FL and GA.BPD in second trimester.

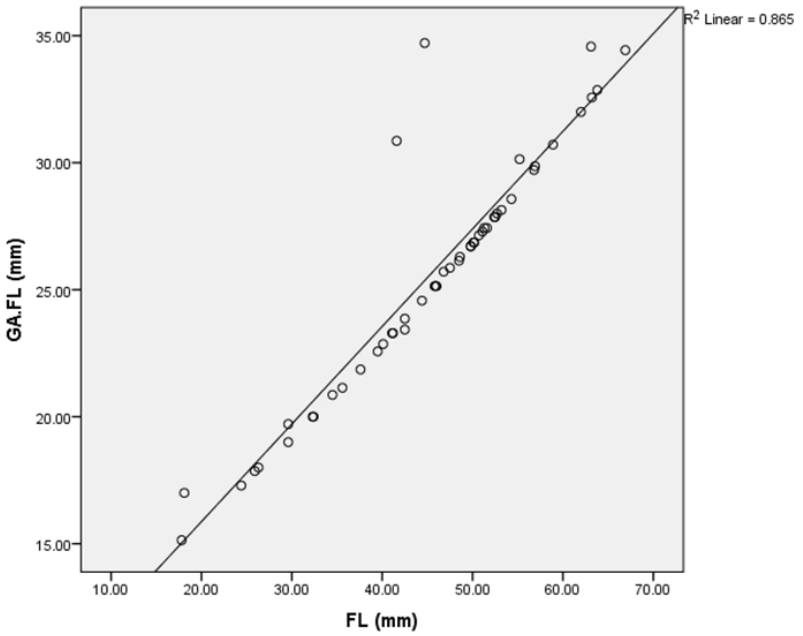

Figure 3. Scatter plot between GA.FL and FL in second trimester.

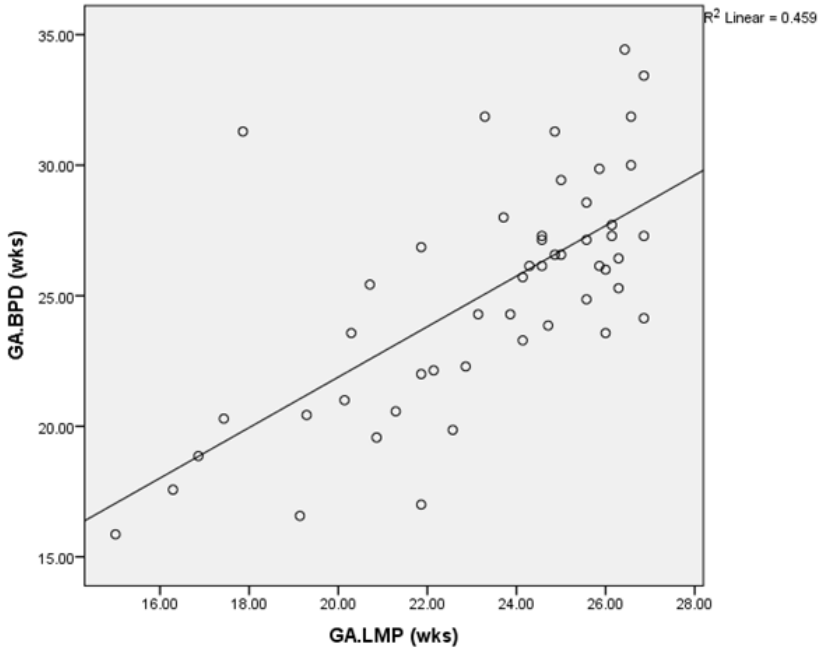

Figure 4. Scatter plot between GA.BPD and GA.LMP in second trimester.

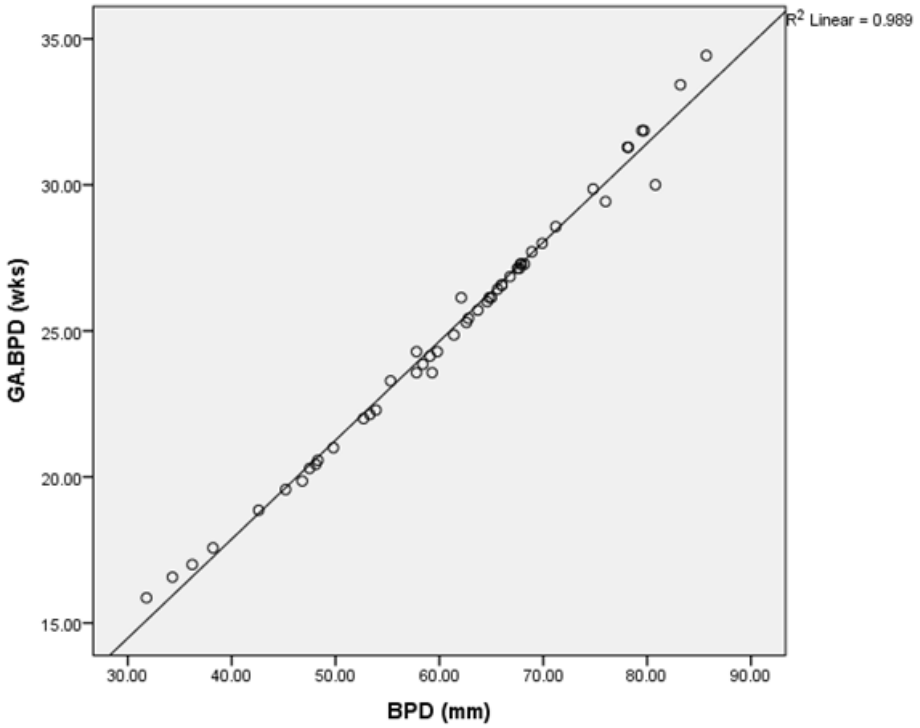

Figure 5. Scatter plot between GA.BPD and BPD in second trimester.

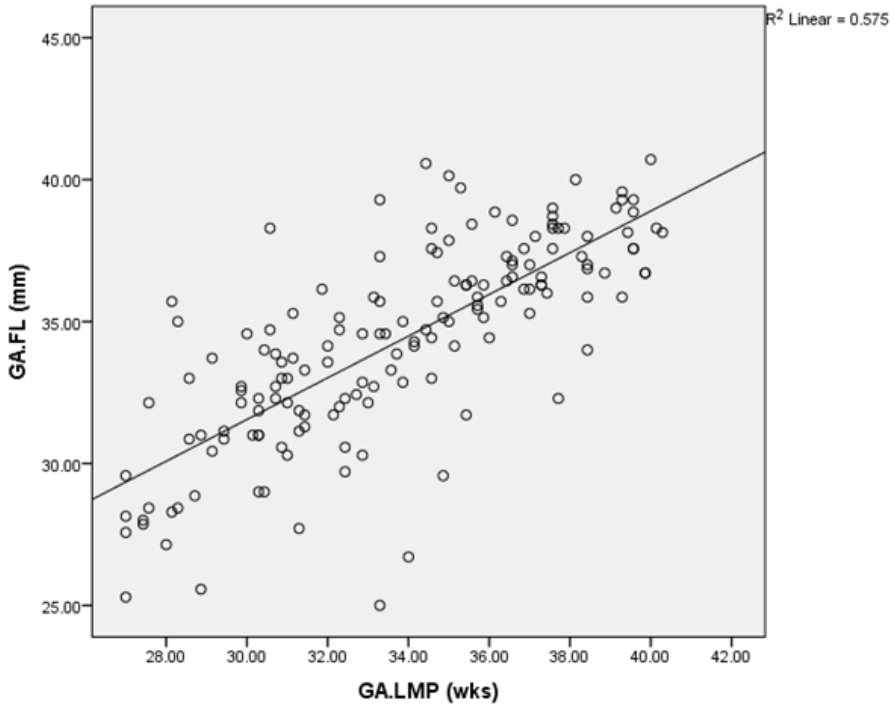

Figure 6. Scatter plot between GA.FL and GA.LMP in the third trimester.

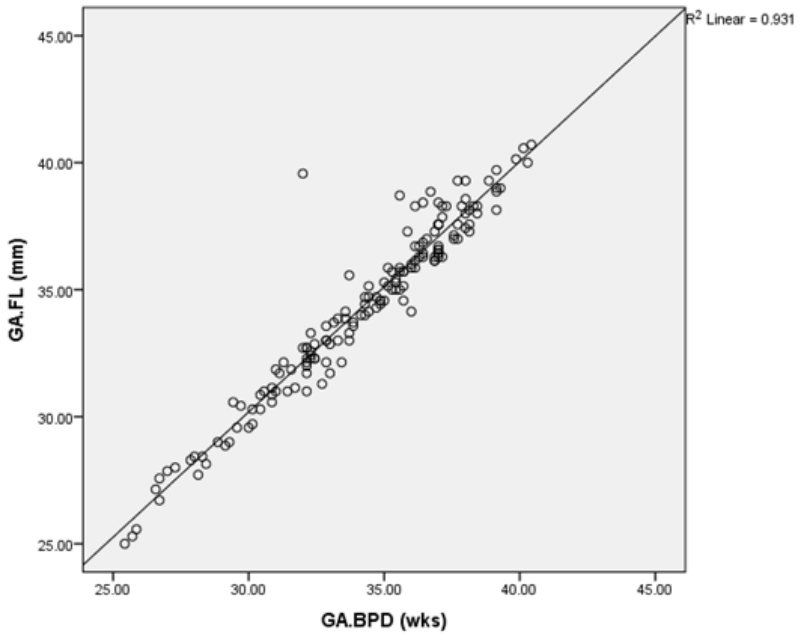

Figure 7. Scatter plot between GA.FL and GA.BPD in the third trimester.

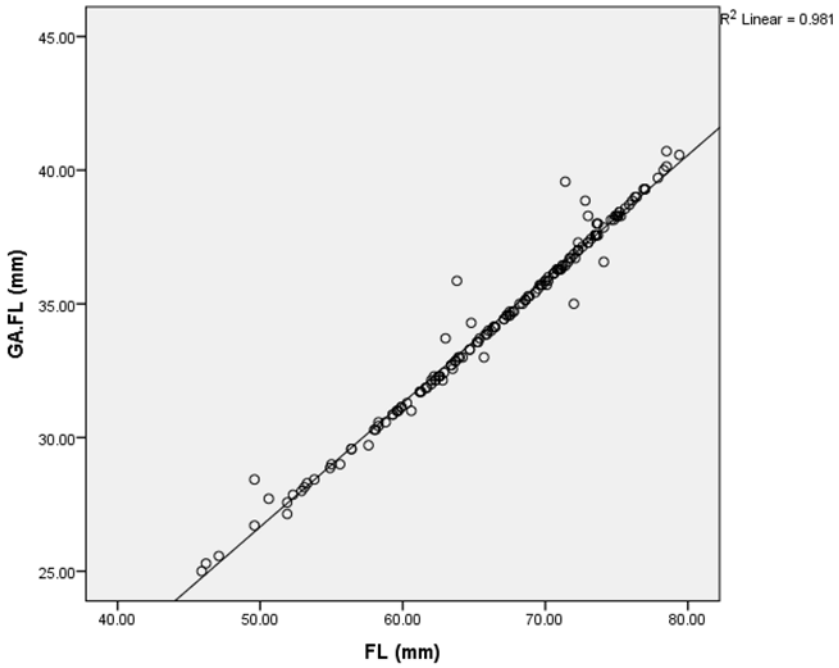

Figure 8. Scatter plot between GA.FL and FL in the third trimester.

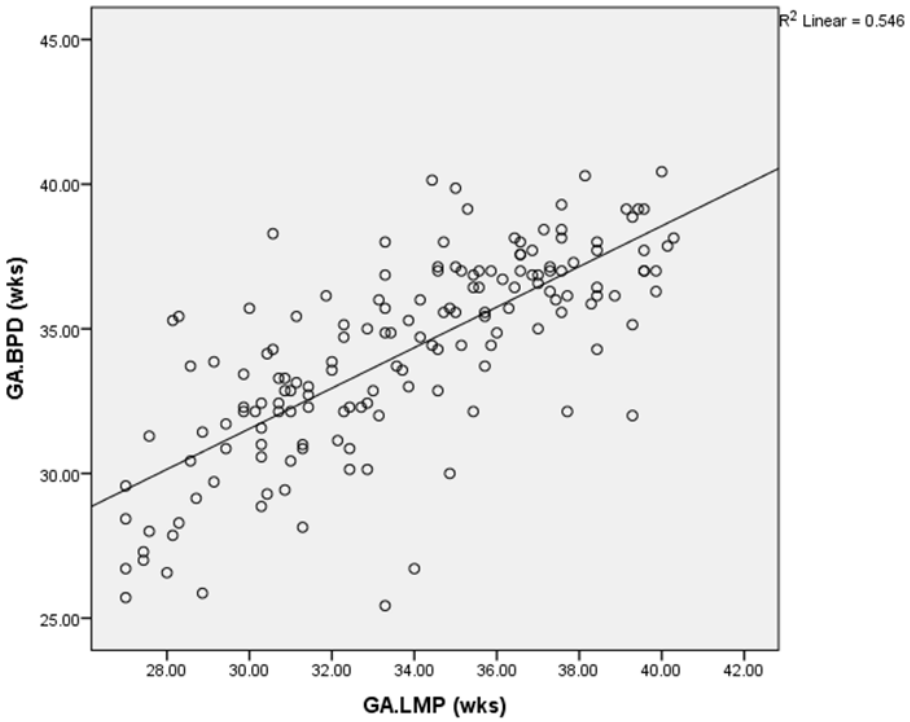

Figure 9. Scatter plot between GA.BPD and GA.LMP in the third trimester.

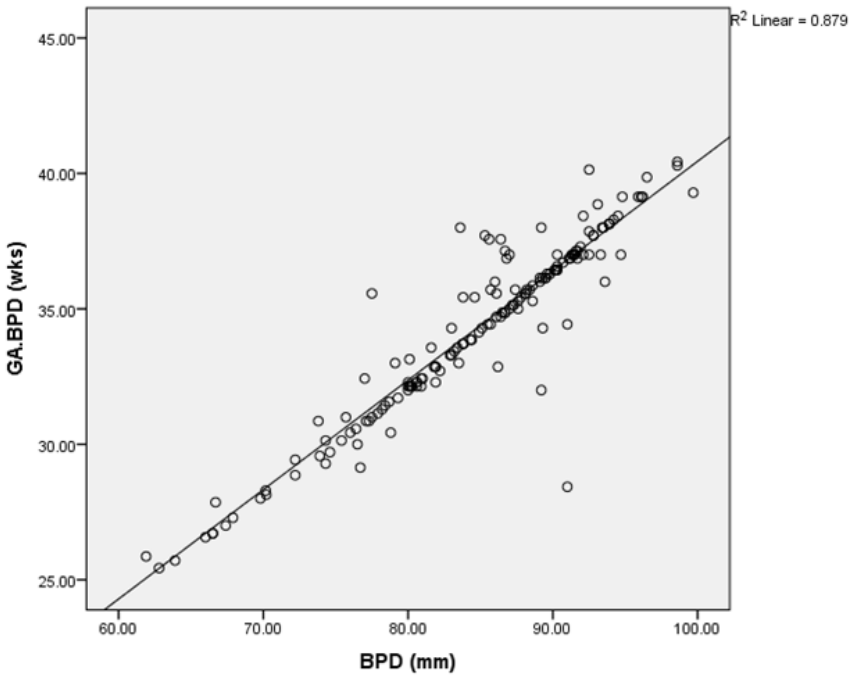

Figure 10. Scatter plot between GA.BPD and BPD in the third trimester.

Discussion

In the present study, the appropriateness of femur length and biparietal diameter as foetal biometric parameters for ultrasonic estimation of GA was assessed. As early as the calculated GA of 12 weeks, these foetal parts are visualized and measured. This is consistent with the statement that measurement of the biparietal diameter may be possible from gestational age of 12 weeks until term [2]. Some prior studies posited that visualization of the femur is possible as from the 14th week of gestation until delivery [2,14].

The two peaks due to abnormal high femur length and biparietal diameter in the second trimester could be attributed to the inability of the subjects to accurately state their LMP; hence the discrepancies between the biometric parameters and respective GA. The mean GA difference observed between femur and last menstrual period is outside the ±2 weeks acceptable with range. This indicates that in this study, femur length does not provide an acceptable gestational age. In the case of biparietal diameter, the mean difference is < 2 weeks, showing that it can be used to estimate gestational age in the second trimester. In the third trimester, the mean difference between GA.LMP and FL, and GA.LMP and BPD shows FL and BPD can be acceptably used to estimate gestational age, since the differences observed are less than one week. The observation in the present study that no significant differences between the mean GA based FL and BPD in both second and third trimester is similar to the finding in a previous study also in third trimester.

The significant positive correlation of FL and BPD with their respective gestational age in both second and third trimesters shows that as gestational age is increasing, the biometric parameters are also growing. This is similar to the finding of Varol et al.[12]

In conclusion, at 12th weeks, calculated GA (from LMP) was 12.43 weeks and mean femur length was 12.74mm corresponding with USS GA of 14.11weeks, while mean BPD was 27.43mm corresponding to USS GA of 14.82 weeks. In both second and third trimesters, there were significant positive correlations between, GA based on FL and LMP; GA based on FL and FL; GA based on BPD and LMP; GA based on BPD and BPD; and GA based on FL and BPD. In the second trimester, the mean GA based on FL and BPD were significantly higher than that based on LMP, but there was no significant difference between the mean GA based on FL and BPD. In the third trimester, there were no significant differences in the mean gestational age between FL and LMP, BPD and LMP, FL and BPD. This study will be of relevance in obstetrics and gynaecology, and in forensic medical practice.

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Isolation and Identification of Non-gonococcal Organisms Associated with Urethritis from Clinical Samples.

Adomi, P O.

Abstract

Introduction: Urethritis is an inflammation of the urethra, the tube that carries urine from the bladder to the outside of the human body. Many of the Infectious causes of urethritis are sexually transmitted and categorized into gonococcal urethritis (GU) i.e due to infections with *Neisseria gonorrhoeae* and non-gonococcal urethritis (NGU) due to organisms other than gonorrhoeae. The main purpose of study was to isolate and identify microbial agent of urethritis.

Material and Methods: Cultural and Biochemical methods were used to isolate and identify microbial agents of urethritis from urine and urethra collected randomly from 200 patients with clinical urethritis.

Results: Non gonococcal agents of urethritis were isolated, they include the following microorganisms *Escherichia coli* (31.6%) *Staphylococcus aureus* (19.5%), *Candida albicans* (15.0%), *Proteus mirabilis* (13.5%), *Pseudomonas aeruginosa* (7.5%), *Staphylococcus saprophyticus* (7.5%) and *Klebsiella pneumoniae* (5.3%).*Pseudomonas aeruginosa* have not been mentioned previously as agent of non gonococcal urethritis.

Conclusion: Agents of nongonococcal urethritis were isolated. These include three gram negative rods, two gram positive cocci, and a fungus.

Keywords: Nongonococcal urethritis, bacterial, fungi, cultural, biochemical, identification.

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Introduction

Urethritis is a sexually transmitted disease which occur in both male and female, however, urethritis is under diagnosed in females. Urethritis is an inflammation of the urethra, the tube that carries urine from the bladder out of the human body. Many infectious causes of urethritis are sexually transmitted and categorized into gonococcal urethritis (GU) i.e due to infections with *Neisseria gonorrhoeae* and non-gonococcal urethritis (NGU) due to cases other than gonorrhoea[1]. Urethritis can also be classified into specific urethritis if caused by infections transferred through sex (ITTS) by gonococcus, virus of herpes simplex, mycoplasma and unspecific urethritis if caused by conditionally pathogenic microflora: streptococci, staphylococci, coliform bacteria, *Proteus* and fungi.

Urethritis occur worldwide, with approximately 62 million new cases of gonococcal urethritis and

89 million nongonococcal urethritis cases reported yearly[2].

Nongonococcal urethritis (NGU) is among the most widespread conditions for which care is provided in the western world and is the most commonly diagnosed in men attending sexually transmitted disease clinics[3]. In 1972, gonorrhoeae was surpassed by NGU as the more common diagnosis made at private physician offices. Since then the divergence between the two has progressively increased [4].

The morbidity associated with NGU are known to be approximately equal in severity to those of gonococcal disease. However, in contrast to gonorrhoeae, the infectious agents that causes NGU are non-reportable, with the exception of *Chlamydia trachomatis*. The sexual fitness of NGU patients are mostly undetected, accounting for the relative rising incidence of NGU with respect to gonococcal diseases [5]. The prevalence rates of sexually transmitted infectious (STI) present major health, social and economic problems in the developing world leading to morbidity, mortality and stigma [6]. The prevalence rate of STI are far higher in developing countries this is because STI treatment is less accessible, the disease management is through syndromic approach thus asymptomatic cases go undetected and untreated.

Morbidity due to urethritis occur both in men and women. About 1-2% of male patients with urethritis develop urethra stricture or stenosis. Other potential complications include post acute epididymitis, abscess formation, proctitis and infertility, sexually acquired reactive arthritis (Reiter syndrome)[7]. Pelvic inflammatory disease may complicate the disease in females. This disease may subsequently cause infertility, and ectopic pregnancy because of post inflammatory scar formation in the fallopian tubes. Children born to mother infected with chlamydia may develop conjunctivitis, otitis media or pneumonia if exposed to the organs passing through the birth canal. Disseminated syndrome occur in fewer female patients[7]. The purpose of this study was to isolate and identify microbial agents of urethritis as a away of gaining deeper understanding into the pathogenesis and hence the management of the disease.

Materials And Methods

Study design; setting and Population

This was a cross-sectional study that was conducted at General hospital Warri, Eku Baptist hospital and Delta State University Health Centre Abraka all in Delta State Nigeria between May, 2010 and January, 2011.

The study population consisted of adult male and female patients who have been diagnosed clinically with urethritis based on history and presentation with any of the following symptoms: dysuria, urgency, frequency, hesitancy, urethral discharge, dyspareunia and abnormal vaginal discharge. Samples were drawn from population of patients who presented with urethritis symptoms. Samples were collected randomly from both males and females within the sampling period. Samples were collected until the total of 200 was achieved.

Sample Collection and Culture

Clinical specimens from urine and urethral swabs were collected by methods described by Cheesebrough, (2004)[8] Clean catch midstream urine samples were collected in sterile universal containers, while specimen from urethra was collected by gently inserting about 2 centimetres of sterile cotton swab into the urethra and turned. A total of 200 specimens obtained from patients were labelled and

subjected to microbiological analysis, using standard streaked plate method as previously prescribed by Cowan and Steel, (1993)[9]. Specimens from urethral swab, and urine were inoculated onto Nutrient agar, MacConkey agar, Cystine lactose electrolyte –deficient agar and Chocolate agar. The urine sediments were inoculated into Saboraud dextrose agar (SDA) [10,11]. Plates were incubated at 37°C for 24 hours , Chocolate agar plates were incubated in carbon (iv)oxide using candle extinction Jar. While SDA plates were incubated for 25 °C and 37°C for 24-72 hours. After the period of incubation, the plates having significant growth were subcultured until pure colonies were obtained. The pure cultures were preserved in agar slants for further study.

Statistical analysis was simple frequency table using Excel spread sheet.

Identification

Cultures were identified using standard biochemical methods, Cultural characteristics in selective media, Gram staining and biochemical reactions, according to Bergeys Manual of systemic bacteriology [12]. Biochemical test used to confirm the various bacterial isolates were Coagulase test, Catalase test, Indole production, Methyl red test, Voges-proskauer reaction, Urease production, Citrate utilization, sugar fermentation and Haemolysis test on blood agar plates [8].Yeast was identified using standard methods such as Gram staining, germ tube formation, chlamydospores formation on corn meal agar and sugar fermentations and assimilation.

Ethical Clearance

Ethical clearance to conduct this study was obtained from the health institutions used for study. Samples were drawn from population of patients who presented with urethritis symptoms.Samples were collected randomly from both males and females within the sampling period. Samples were collected until the total of 200 was achieved. The cost of the procedure was borne by the researcher.

Results

The demographic information of patients as obtained from Laboratory record is presented in Table 1. Table 1 shows that 60(30%)were in the age group of 26-30years. Males 118 (59%) than females 82 (41%) of which 114 (57%) were married.

Bacterial and fungal isolates obtained from cases of Urethritis.

Of the 200 samples collected, 133 were positive for at least one organsm. Table 2 shows microorganisms isolated from patients with urethritis at the study location. These organisms were *Escherichia coli*, *Staphylococcus aureus, Staphylococcus saprophyticus, Klebsiella pneumoniae Proteus mirabilis, Pseudomonas aeruginosa, and Candida albicans* and Table 3 shows cultural and biochemical characteristics of microorganism isolated from various samples. *E. coli*. isolates (31.6%) were confirmed as positive for catalase test, indole production, methyl red test, production of acid from glucose, manitol, lactose, and sucrose but negative for urease production, citrate utilization and Voges-Proskauer reaction [12]. *Staphylococcus aureus*, (19.5%) were found as positive for coagulase, catalase, methyl red, Voges-Proskauer, heamoglobin test and negative for oxidase and indole tests. They also produced acid from glucose, lactose and sucrose. According to Holt *et al.*, 1993, the isolates appeared to be *S. aureus.*

Klebsiella pneumoniae (5.3%) found as negative for Voges proskauer, and positive for lactose, urease, citrate and negative for hydrogen sulphide. *Proteus mirabilis (*13.5%) did not ferment lactose,

positive for urease, indole, motility and produce hydrogen sulphide. *Pseudomonas aeruginosa* (7.5%) were found as positive for oxidase enzyme, produce acid from glucose but no gas production. *Staphylococcus saprophyticus* (7.5%) was positive for catalase, negative for coagulase and haemolysis.*Candida albicans* (15%) was gram positive,produce germtube , pseudohyphae and fermented various sugars.

Table 1 :the Demographic Characteristics of Patients

CHARACTERISTICS	**FREQUENCY (N=200)**	**PERCENTAGE (%)**
Age group (years)		
20-25	50	25
26-30	60	30
36-40	24	12
41-45	12	6
46-50	20	10
51-55	12	6
56-60	4	2
Sex		
Males	118	59
Females	82	41
Marital status		
Married	114	57
Single	86	43

Table 2: Percentage of microorganism isolated from clinical specimens.

Isolates	**No N=133**	**Percentage%**
Escherichia coli	42	31.6
Staphylococcus aureus	26	19.5
Candida albicans	20	15.0
Proteus mirabilis	18	13.5
Pseudomonas aeruginosa	10	7.5
Staphylococcus saprophyticus	10	7.5
Klebsiella pneumonia	7	5.3

Table 3: Cultural and Biochemical characteristics of isolates

									Acid from sugars				Triple sugar from medium							
Isolates	Gram stain	Indole production	Methyl red test	Voges-proskauer	Citrate utilization	Urease test	Oxidase test	Motility	Lactose	Mannitol	Glucose	Sucrose	Slope	Butt	H_2S	Gas	Coagulase test	Catalase test	Mannitol salt agar	Hemolysis
Escherichia coli	GNB	+	+	-	-	-	-	+	+	+	+	+	A	A	-	+	NA	+	NA	NA
Proteus mirabilis	GNB	-	-	-	+	+	-	+	-	-	+	+	K	A	+	+	NA	+	NA	NA
Klebsiella pneumonia	GNB	-	+	+	+	+	-	-	+	+	+	+	A	A	-	+	NA	+	NA	
Pseudomonas aeruginosa	GNB	-	-	-	+	-	+	+	-	+	-	-	K	K	-	-	NA	+	NA	+
Staphylococcus aureus	GPC clusters	-	+	+	N A	N A	N A	-	+	+	+	+	NA	NA	NA	NA	+	+	+	+
Staphylococcus saprophyticus	GPC	N A	N A	N A	N A	N A	N A	-	+	+	-	+	NA	NA	NA	NA	-	+	-	-

Biochemical characteristics of yeast

Isolate	Gram stain	Fermentation					Assimilation						Other reactions					
		Dextrose	Maltose	Sucrose	Lactose	Galactose	Dextrose	Maltose	Sucrose	Galactose	Lactose	Urease	Pseudohyphase	Growth at 37°C	Germ tubes	Indian ink	Capsule
Candida albicans	Gram positive oval shaped cocci	+	+	-	-	-	+	+	+	+	-	-	+	+	+	-	-

KEY + Positive - Negative NA Not Applicable K Alkaline (Red-pink) A Acid (Yellow).

Discussion

Sexually transmitted infections occur worldwide, with more than 340 million new cases which are curable [13]. Sexually transmitted diseases are prevalent in sub-Sahara Africa especially Nigeria. Sexually transmitted infection include gonorrhoeae, syphilis, trichomoniasis, urethritis and Human Immunodefieciency Virus (HIV)[14].

Urethritis is the inflammation of urethra, which usually occurs in both men and women. Urethritis can be infectious and noninfectious. Non-infectious urethritis appears during the damages of urethra with the diagnostic and therapeutic procedures, also as reaction to food and drug allergens. For infectious urethritis which is the focus of this study. Infection of the anterior urinary tract (urethritis) is mainly caused by *Neisseria gonorrhoeae*, Staphylococci, Streptococci and Chlamydiae [8,15]. In this study however, *Neisseria* was not isolated from any clinical specimen investigated. The reason may be due to antibiotic abuse. It is difficult to recover this microorganism in culture after antibiotic intake, moreover, symptomatic treatment of sexually transmitted disease is common in Nigeria[16] and *Nesseria gonorrhoeae* is difficult to recover from surveillance culture, after antibiotic intake. Other microorganism found in urethral discharges include Staphylococci, streptococci, *Escherichia coli* and *Candida albicans*, [17,18]. Eventually, microorganism isolated from this study included *Staphylococcus aureus, S. saprophyticus, Klebsiella pneumoniae, Pseudomonas aeruginosa, Esherichia coli, Proteus mirabilis and Candida albicans.* Specimens collected included urine sample, and urethral swabs.

Escherichia coli (31.6%) isolated as agent of nongonococcal urethritis. Previous studies have established the occurrence of *Escherichia coli* in urethral smear of men with urethritis, Dan *et al.* (2012)[19], reported the isolation of *E. coli* by culture and confirmed by pulse-field gel electrophoresis of urethral discharge and urine of a man with urethritis and orchiepididymitis, with a normal urinary tract. Similarly, *E. coli* was detected in men who were homo and bisexual individuals. About 62% of cases of population studied, presented with urethritis in addition to or preexisting cystitis [20].

S. aureus (19.5) was detected as agent of non gonococcal urethritis .*S. aureus* was detected as causative agent of nongonococcal urethritis, of 202 cases of Gram positive cocci, *S. aureus* was recovered from 178 of cases from men presenting with urethritis in a health centre in Nigeria. Ivanor, (2007)[21] isolated Coryneforms coagulase negative staphylococci, streptococci, and *Lactobcaillus* spp from healthy men aged between 18 and 24. While *Staphylococcus aureus*, enterococci, micrococci and enterobacteriaceae (*Escherichia coli*, Enterobacter spp, *Enterococcus feacalis*) were solated from group of men with non-chlamydial, non-gonococal urethritis or persistent non specific urethritis. *Staphylococcus aureus, Escherichia coli, Enterobacter* spp, *Micrococcus spp, Enterococcus feacelis* were not isolated from the healthy men.

Candida albicans (15.0%) was also isolated from the clinical specimens in this study. *Candida* species especially *Candida albicans* are found in small numbers in the commensal flora (mouth, gastrointestinal tract, vagina, skin) of about 20% of the normal population [22]. *Candida* can be transmitted sexually and so has been listed by the Centre of Disease Control and Prevention as a sexually transmitted disease patogen[23] . *Candida albicans* proliferates faster due to altered condition of the host as such cause disease. Genitourinary tract infection is prevalent in females during adolescence and childbearing years [24]. *Candida albicans* has been mentioned as one of the

causative agents of urethritis[18] . *Candida* species were isolated in 30 patients with nongonococcal urethritis who had not responded to classical antimicrobial therapy[25].

Proteus mirabilis (13.5%) was isolated, as well. *P. mirabilis* inhabits the human urinary tract where it is believed to cause urinary tract infection associated with the formation of renal and bladder calculi. *P. mirabilis* require an alkaline environment[26] . The flagellum of *P. mirabilis* is important to its motility and is able to colonize the surfaces it comes in contact. The flagellum has been linked to the ability of the organism to form biofilms aiding in the bacteria resistance to defenses of the host and selected antibiotic. *P. mirabilis* also uses pili to adhere to the host urinary tract. Ability to possess urease enable the organism to thrive due to raised pH. Increase pH allows stone formation to take place. On occasion, the stones fill the entire renal pelvis. *P. mirabilis* infection occurs when the bacterium moves to the urethra and urinary bladder. Though majority of urinary infection are due to *E. coli*, urinary tract infection caused by *P. mirabilis* occur in patient with long-term catheterization, where it creates encrustation on the urinary catheters and thereafter block the catheter. Symptoms of urethritis are mild and include; frequency of urination and pyuria (presence of white blood cells in the urine)[26]

P. aeruginosa and S. saprophyticus (7.5%) P . aeruginosa is present on the skin of the axila and perineum in some persons. It also infect the ear, joint, vagina and cervix [27]*P. aeruginosa* was identified as agents of non gonococcal urethritis in this study, though not previously mentioned in previous studies. *S. saprophyticus* has also been isolated from men attending sexually transmitted disease clinic. The urethral smear of these men had 10 leukocytes per high power focus[28]). *K. pneumonia* (5.3%) isolated in this research has been implicated as agent of urethritis.

Conclusion

Urethritis as a sexually transmitted disease cause morbidity and mortality in young population. This group of people among the general population are sexually active. Isolation and identification of causative agents of this disease is important in microbial diagnosis. When the disease causing agents are known and treated, morbidity and mortality as a result of urethritis will be reduced. The transmission process will be intercepted and therefore limit the spread of disease in the general population. Non gonococcal agents of urethritis isolated and identified using cultural and biochemical method included the following microorganisms: *Escherichia coli* (31.6%) *Staphylococcus aureus* (19.5%), *Candida albicans* (15.0%), *Proteus mirabilis* (13.5%), *Pseudomonas aeruginosa* (7.5%), *Staphylococcus saprophyticus* (7.5%) and *Klebsiella pneumoniae* (5.3%).*Pseudomonas aeruginosa* have not been mentioned previously as agent of non gonococcal urethritis. Further study on molecular identification of non gonococcal urethritis shall be reported later.

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Blood Levels of Some Toxic Metals and Their Potential Health Impact in Human Immunodeficiency Type 1 Infected Subjects.

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Abstract

Background: The introduction of antiretroviral therapy in the management of immunodeficiency virus infection has reduced the mortality rate and increased the average life-expectancy of infected subjects. The prevalence of non-infectious chronic diseases and malignancies are also on the rise. Environmental pollutants could adversely impact on the prognostic outcomes of HIV-1 infection probably due to the combination of the effects of environmental exposures and chronic inflammation and the role of toxic metals exposure and their health impact in infected individuals have been under-reported**.**

Objective: To evaluate the levels of cadmium (Cd),lead (Pb), mercury (Hg) and nickel (Ni) in HIV-1 infected subjects on highly active anti-retroviral therapy(HAART), HAART-naïve and discusses their potential health impacts.

Materials and methods: The study participants were 300 made up of 100 confirmed HIV-1 positive on HAART, 100 HIV-1 positive HAART-naïve and 100 HIV-1 negative controls. Measured toxic metal levels were determined using inductively coupled plasma mass spectrometer (Agilent 7500, Norwalk, U.S.A)

Results: Data indicated significantly higher ($p<0.001$) measured toxic metals in HIV positive subjects than controls, with levels in subjects on HAART higher than HAART-naive.

Conclusion: High toxic metal levels may lead to increased oxidative stress and adverse prognostic outcomes. Periodic evaluation of toxic metals in HIV-1 infected subjects is suggested and preventive strategies of environmental pollutants should be adopted.

Keywords: Human immunodeficiency virus infection, toxic metals, oxidative stress

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Introduction

Human Immunodeficiency type 1(HIV-1) is a major health challenge in sub-Sahara Africa, causing significant morbidity and mortality. The prevalence of the viral infection was estimated to be 3.2% among adults in Nigeria, thus making Nigeria the second country having the largest number of people living with the infection in Africa[1] The introduction of antiretroviral therapy in the management of the infection had reduced the mortality rate among infected subjected thereby increasing their average life-span.[2] It was reported that the average life expectancy after HIV diagnosis in the United States doubled, increasing from 10.5 to 22.5 years [3] while the annual death rate declined from 1.69% in 1999-

2000 to 0.96% in 2007-2008.[4] The longer life expectancy among infected subjects as a result of improved management of the disease has led to the occurrence of non-infectious chronic diseases such as cardiovascular disease, diabetes mellitus, bone fractures, renal impairments, hypertension and malignancies.[5-7] Even though major advances have been made in understanding the biology of HIV infection and development of antiretroviral therapy in the past decade,[8] the role of toxic metals exposure and their health impact in individuals living with HIV has been under-reported.

Exposure to environmental pollutants such cadmium (cd), lead (Pb), mercury(Hg) and nickel(Ni) had been reported to increase the risk of many chronic diseases in the general population[9-11] which may also be true for HIV infected subjects. Toxic metals are widespread in the environment. Exposure to toxic metals is entirely unregulated in many developing countries and little monitoring is conducted in developed countries.[12] HIV-infected population generally have a lower socioeconomic status and live in poorer communities, which may consequently result in higher exposure to these toxins considering the correlation between area-level poverty and environmental pollution. Moreover, environmental pollutants could adversely impact on the prognostic outcomes of HIV-1 infection probably due to the combination of the effects of environmental exposures and chronic inflammation.[13] Exposure routes can vary depending on the pollutant. Generally, exposure to the hazardous toxic metals is most likely to arise through inhalation, ingestion, and dermal contact. In addition to direct occupational exposure, people can come into contact with these toxic materials and associated pollutants through contact with contaminated soil, dust, air, water (especially acid rain), and through food sources.[14-15] Fumes and soluble respirable dust of toxic metals are almost completely absorbed by inhalation. Adults absorb approximately 15% of an ingested dose through the gastrointestinal (GI) tract in contrast to 50% GI absorption in children. Gastrointestinal absorption is generally inversely proportional to particle size and directly proportional to the solubility of the toxic compounds.[16] The cumulative effect of these toxic metals could lead to several non-infectious chronic diseases and their levels in HIV-1 infected subjects are rarely assessed. It is not completely clear whether HIV-1 infected individuals are at a higher risk of exposure to environmental pollutants than the general population.[17] Studies that have evaluated the levels of toxic metals in HIV-1 infected subjects are rare. This study therefore seeks to evaluate the levels of Cd, Pb, Hg and Ni in HIV-1 infected subjects on highly active anti-retroviral therapy (HAART), HAART-naïve and discusses their potential health impact.

Materials and Methods

Selection of Study Participants

The study participants were consecutively enrolled and comprised of 300 subjects that consisted of 100 confirmed HIV-1 positive individuals receiving highly active antiretroviral therapy (HAART) (40 males with mean age of 35.6 ± 0.6 years and 60 females with mean age of 32.8± 0.4 years), 100 newly diagnosed HAART-naive HIV-1 positive subjects (48 males with mean age of 33.2± 0.5 years and 52 females with mean age of 32.6 ± 0.2 years) and 100 HIV-1 negative (apparently healthy) individuals recruited from among staff and students of University of Benin, Benin City (controls, 50 males with mean age of 34.6± 0.2 years and 50 females with mean age of 32.0± 0.3 years).

Ethical Consideration

The protocol of this study was reviewed and approved by the ethics Committee, Edo State

Ministry of Health (ethical code HM.1208/112 dated 12th May 2016). The participants gave informed consent before blood samples were collected.

Inclusion and Exclusion Criteria

All the confirmed HIV-1 subjects attending the antiretroviral therapy (ART) clinics at the Central Hospital, Benin City that gave consent were included in the study. All HIV-1 seronegative subjects who had an illness or infection (chest infections, bacterial endocarditis) or smoke cigarettes that may affect toxic metal levels as well as those who did not give consent were excluded from the study.

Sample Collection

The blood specimens were collected from the cubital fossa and were dispensed into EDTA anticoagulant specimen bottles.

The metal levels of the blood samples were determined by inductively Coupled Plasma Mass Spectrometer (ICP-MS)(Agilent 7500, Norwalk, USA) by adopting the methods of Fong et al.[18] Also the samples were confirmed for HIV infection.

Quality control

Standards of the measured variables were adequately prepared in order to check the reliability of the data. Standard sample for the element was diluted to obtain serial dilutions of each sample and was used to calibrate and standardize the electrothermal atomic absorption spectrophotometer before running the analysis, and a graph was generated. Before being used all volumetric polyethylene (including the auto-sampler cups) and glass material were cleaned by soaking in 20% (v/v) HNO3 for 24 h. They were finally rinsed with several washes of Milli-Q® water and dried in a polypropylene container. Certified reference materials from (Le Centre de toxicologie du, Quebec) were analyzed. 3.05 ng/mL was obtained as cadmium measured level from whole blood while 3.38 ng/mL is the certified value. 86.5ng/mL and 7.42ng/mL were obtained as lead and mercury measured levels from whole blood respectively while 93.2ng/mL and 8.02 were the certified value for lead and mercury respectively. In this study, we did not control for nickel exposure and this may likely be a co-founder to the results. The stability of calibration was checked periodically by analyzing the standard solution. Blank samples made from only reagents without sample were analyzed to get rid of any background concentration metals in the system.

Cyflow counter flow cytometer (Facs Flow Cytometer count system, Lincolnshire, IL, USA) was used to determine $CD4^{+}$T-cell count.

Results

Table 1 shows the comparison of measured toxic metals in HIV-1 positive subjects compared with control subjects. Data indicate significantly higher ($p<0.001$) measured toxic metals in HIV positive subjects compared with control subjects.

Table 2 shows the comparison of measured toxic metals in HIV-1 positive subjects on HAART, HAART-naïve and controls.

Table 1: Comparison of measured toxic metals in HIV positive subjects with controls (Mean± SEM)

Measured toxic metals	HIV-1 positive subjects	HIV-1 negative subjects	p-value
Age of subjects	33.5±0.7	33.3±0.3	>0.05
Lead (µg/dL)	1.22±1.00	0.57±0.41	<0.001
Cadmium (µg/dL)	0.62±0.27	0.10±0.01	<0.001
Nickel (µg/dL)	0.89±1.19	0.11±0.01	<0.001
Mercury(µg/dL)	0.08±0.00	0.04±0.00	<0.001
CD4⁺ (cells/µL)	479.6±43.2	789.5±81.2	<0.001

Table 2: Comparison of measured toxic metals between HIV-1positive subjects on HAART, HAART-naive and controls (Mean± SEM)

Measured toxic metals	HIV-1 Positive HAART-naïve N=100	HIV-1 positive on HAART N=100	HIV-1 negative controls N=100	P-value
Age of subjects	32.8±0.5[c]	33.9±0.8[c]	33.3±0.3	>0.05
Lead (µg/dL)	1.07±0.85[ac]	1.38±1.16[a]	0.57±0.41	<0.001
Cadmium (µg/dL)	0.55±0.26[ac]	0.68±0.04a	0.10±0.01	<0.001
Nickel (µg/dL)	0.95±1.51[ac]	0.84±0.11[a]	0.11±0.01	<0.001
Mercury(µg/dL)	0.06±0.02[ac]	0.09±0.01[a]	0.04±0.00	<0.001
CD4⁺ (cells/µL)	507.16±41.45[ab]	452.30±35.9[a]	789.5±81.2	<0.001

a=p<0.001; b=p<0.05; c=p>0.05

Discussion

The exposure levels of environmental pollutants in HIV-1 infected subjects are under-reported in Nigeria. The data presented in this study indicate a significantly higher (p<0.001) levels of measured toxic metals in HIV-1 infected subjects than HIV-1 negative controls. The level of cadmium in HIV-1 positive subjects on HAART was significantly higher (p<0.05) than HIV-1 positive HAART-naïve subjects while the increases in the other measured toxic metals were not statistically significant. The findings in this study are consistent with previous reports.[17,19-20] It was suggested that HIV infected subjects may be significantly more exposed to Cd compared to HIV negative individuals.[17] Chashchin et al.[19] reported that HIV-infected individuals may also be exposed to or accumulate some environmental pollutants such as Pb and Hg in the system,[19] while Afridi et al observed that there was a significantly higher mean levels of Cd, As, Ni and Pb in biological specimens of subjects with AIDS than

controls.[20] The observed higher levels of toxic metals could be due to inability of HIV infected subjects to readily clear these metals, because HIV infection and the use of HAART could impair renal and liver to detoxify and clear toxic metals from the body.[21-23] This finding may suggest that evaluation of toxic metals may be beneficial to HIV-1 infected subjects and intervention strategies to prevent exposure were suggested. [17] The clinical implications of higher levels of toxic metals in HIV-1 infected subjects are not completely clear, but it was suggested that they could be responsible for the increasing incidence of chronic non-infectious diseases in this group of individuals.[17] The relationship between toxic metal exposure and cardiovascular and respiratory diseases has been reported by several authors.[24,25-30] Others reported on the adverse effects of toxic metal exposure on immune function. [31-35] HIV-1 infection is a disease characterized by generalized immune activation[35-37] and elevated inflammatory activity.[38-40] It is suggested that high exposure to toxic metals may exacerbate or initiate chronic diseases caused primarily by HIV-1 infection as well as the use of HAART.

One of the well-known mechanisms toxic metals cause toxicity is by metal-induced oxidative stress through the production of reactive oxygen species. On this basis, heavy metals are divided into redox-active and redox-inactive metals. Fenton-like reaction appears to play a major role in the oxidative stress observed in redox-active metal toxicity. [41] The mechanism of toxicity of redox-inactive metals involves the depletion of cells' major sulfhydryl reserves. [42] Many proteins both structural and others have sulphur containing amino acid which makes them a potential target for these metals. Also, several enzymes including those in the antioxidant defense system which protects cells from the deleterious effects of oxidative stress are unfortunately containing sulfhydryl group to which heavy metals can directly bind. These enzymes are inactivated if the sulfhydryl group is in their active site. [43] Furthermore, zinc, which usually serves as a cofactor of many enzymes, such as superoxide dismutase could be replaced by toxic metals, thereby making the enzymes inactive. [44] Therefore, metal mediated oxidative damage occurs. Many metals could directly act as catalytic centers for redox reactions with molecular oxygen or other endogenous oxidants, producing oxidative modification of biomolecules such as proteins or DNA. This may be a key step in the carcinogenicity of certain toxic metals.[45] Besides oxygen-based radicals, carbon- and sulphur-based radicals may also be produced. Nickel and chromium are two examples of metals that act, at least in part, by generation of reactive oxygen species or other reactive intermediates.[45] Alternatively, toxic metals could displace redox active essential elements from their normal cellular ligands (an ion, atom or molecules that donate a pair of electrons to a metal atom to form coordinate bond) which, in turn, may result in oxidative cellular damage. A good example is Cd, which is not redox active, but may well cause oxidative stress through the release of endogenous iron, an element with high redox activity.[46] Metals in their ionic form can be very reactive and form DNA and protein adducts in biological systems.[47]

In conclusion, our data indicate measured toxic metals were higher in HIV-1 infected subjects whether on HAART or HAART naïve. The levels of the toxic metals in those on HAART appear to be higher than HAART-naïve subjects. It is suggested that periodic assessments of toxic metal levels could be done and preventive strategies of environmental pollutants may be helpful.

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A Study on the Management and Perinatal Outcome of Preterm Prelabour Rupture of Membranes at Delta State University Teaching Hospital, Oghara.

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Abstract

Background: Preterm Prelabour Rupture of Fetal Membranes and its management is a significant burden in obstetrics, occurring in 2–3% of all pregnancies and leading to 30–40% of preterm births. It is therefore a significant risk factor for perinatal morbidity and mortality arising from its association with fetal prematurity. The aim of this study was to review the management and perinatal outcome of PPROM in Delta State University Hospital, Oghara.

Methods: This was a descriptive retrospective study conducted in the Department of Obstetrics and Gynaecology, Delta State University Teaching Hospital from January 2011 to December 2015. The study included 80 pregnant patients presenting with Preterm prelabour rupture of membranes between 28 to 36weeks+6days.

Results: The prevalence of PPROM was 5.7%. Majority of the women were aged between 30-34 and ≥35 years and the mean parity was 1.48±1.55. 37% of the patients presented between 28-31 weeks. No apparent risk factor for PPROM was identified in 26% of the patients. 43% had vaginal delivery and mean birthweight of the babies was 1.53±0.52kg. Majority of the preterm neonates had first and fifth minute Apgar scores greater than 7. Perinatal mortality was 18.8% in this study.

Conclusion: Premature Prelabour Rupture of Membrane is associated with poor fetal outcomes arising from the problems of prematurity and neonatal sepsis. A clear understanding of its consequences is essential in providing adequate interventions needed in the prevention of unfavourable perinatal outcomes.

Keywords: PPROM, Incidence, Management, Perinatal outcomes

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Introduction

Preterm Prelabour Rupture of fetal Membranes is defined as the spontaneous rupture of membrane that occurs between the gestational ages of 28 and 37 completed weeks1 in resource poor countries. It occurs in 2-3% of all pregnancies and is associated with an increased risk of prematurity and neonatal sepsis.[2] It accounts for 60% of preterm deliveries, approximately 52 % of perinatal mortality in Nigeria[3], 18% - 20% in the United States and 70% globally[4-35]. PPROM is associated with significantly increased risk of maternal, fetal and neonatal morbidity and mortality resulting from associated complications. It can lead to significant fetal perinatal morbidity such as umbilical cord prolapse, placenta abruptio, respiratory distress syndrome, neonatal sepsis, and fetal death. Also, maternal morbidity may arise from postpartum partum haemorrhage, puerperal sepsis,

endometritis, delayed resumption of menstruation and Asherman syndrome[4,6-8]. In tropical countries such as Nigeria, where there is limitation of facilities and personnel for proper neonatal care as well as a high maternal mortality rate, PPROM poses a significant impact on dilemma in contemporary obstetric practice[9].

Although the cause of PPROM remains unknown in most cases but it's pathogenesis is related to the abnormal initiation of membrane stretch, local inflammation and ascending bacterial colonisation[6]. Inherent Weakness in the chorioamnion membrane has also been shown to be a cause of PPROM, which may be attributed to reduced collagen content 10. A number of risk factors have also been identified with PPROM. Some clinical factors associated with preterm PROM include low socioeconomic status, black race, low body mass index, tobacco use, previous history of preterm labour and PPROM history, vaginal bleeding at any time in pregnancy, multiple pregnancy and polyhydramnious[4,7-9].

The management of pregnancies complicated by PPROM is challenging and controversial in contemporary obstetrics and often times requires individualization of patients to achieve a favourable perinatal outcome 8. Accurate diagnosis of PPROM should be made and this requires a thorough history, physical examination including a sterile speculum exam to confirm liquor drainage as well as ancillary laboratory studies 4. These would allow for gestational age specific obstetric interventions to optimize perinatal outcome and reduce fetomaternal complications. For cases of PROM remote from term, expectant management has been of great value in the improvement of perinatal survival. In our environment where the chances of extra uterine survival of fetuses less than 28 weeks is low, PROM occurring before 34 weeks gestation are usually managed conservatively[9]. This usually involves the use of antibiotics, steroid therapy, in addition to fetal monitoring. These measures have occasionally improved neonatal outcomes[4,11,13].

Diversity of opinions exists still globally on the management preterm PROM. In Canada and Australia, there is a lack of consensus on management of cases with PROM occurring between gestational ages of 34 and 37 weeks14. However, the American College of Obstetricians and Gynaecologists (ACOG) recommends Induction of Labour at gestational age of 34 weeks 11. Though the Royal College of Obstetricians and Gynaecologists guidelines recommend that delivery at gestational age of 34 weeks should be considered, they were however less specific on the process of delivery[13].

However, the management of PROM at term have favoured immediate delivery usually where there is no contraindication by induction of labour 14. In a recent study by Morris et al involving a multicentre randomised controlled trial, the findings showed that in the absence of overt signs of infection or fetal compromise, a policy of expectant management with appropriate surveillance of maternal and fetal wellbeing should be followed in pregnant women who present with ruptured membranes close to term[15].

On the backdrop of this, the study was conducted to review the management and perinatal outcome of PPROM in Delta State University Teaching Hospital, and further provide a framework for the management of such cases within the region.

Methods

This study was a descriptive retrospective study done over a 5 year period at the Delta State University Teaching Hospital, Oghara, Nigeria

between January 1st 2011 and December 31st 2015. Information was obtained from antenatal records, labour ward records and patients' case files. Data of 86 women who presented with PPROM were obtained. Information extracted were socio-demographic characteristics (maternal age, parity, level of education, and gestational age), birth weight, Apgar scores at 1st and 5th minutes and fetal outcome.

The data were analyzed by descriptive statistics using the statistical package for social science version 22 (SPSS Inc. Chicago, IL, USA) and the results expressed in descriptive statistics by simple percentages.

All confirmed singleton pregnancies of spontaneous PPROM more than 28 week and less than 37 weeks.

All cases of intact membrane, less than 28 weeks of gestational age, bleeding per vaginum, multiple pregnancies, any complication of pregnancy other than PROM that affect fetal and neonatal outcome e.g. IUGR, foetal malformation, preeclampsia, onset of labour within one hour of admission.

The diagnosis of PPROM was established by history, sterile pelvic speculum examination showing amniotic fluid trickling from cervix or in the posterior vaginal fornix and pad test. An Ultrasonography was done in each case to assess gestational age, presentation, exclusion of congenital anomalies and amniotic fluid index.
Conservative management was done where there was no contraindication in PPROM cases of 28weeks to 33weeeks+6days till the onset of spontaneous labour or till the maternal or fetal indication for delivery ensues such as chorioamnionitis, meconium stained amniotic fluid, abruption, cord prolapse, fetal distress and/or advanced labour on admission. In PPROM cases >34weeks, patients were induced with either misoprostol or oxytocin if not in spontaneous labour. Patients were hospitalized until delivery two doses of dexamethasone 12 mg I.M 12 hours apart were given to the mothers <34weeks to enhance fetal lung maturity. Prophylactic antibiotics were used in all cases for ten days or up to delivery (whichever is later) to reduce the risk of infection. Maternal monitoring to detect chorioamnionitis was done by monitoring pulse rate, temperature, abdominal tenderness, colour and smell of liquor and cardiotocography C.T.G.

Intrapartum fetal monitoring was done using CTG. Mothers were monitored for complications such as abruption, PPH, retained placenta. After delivery, neonates with poor Apgar score or infection were admitted into Neonatal Intensive Care Unit (NICU) for further management and their outcome were studied.

Results

This was a 5-year prospective observational study, from January 2011 to December 2015 which involved 80 parturients who presented with preterm prelabour rupture of membranes.

During the study period, a total of 1,398 deliveries took place in the study centre, giving a preterm prelabour rupture of membranes incidence of 5.7%.
The results are outlined in tables below:

Table 1: Socio – demographic characteristics of Parturients with preterm rupture of membrane

Variable		N (%)
AGE (years)	..	4 (5.0)
	20-24	9 (11.2)
	25-29	21 (26.2)
	30-34	23 (28.7)
	..	23 (28.7)
	Total	80 (100.0)
PARITY	0	26 (32.5)
	1-4	50 (62.5)
	≥5	4 (5.0)
	Total	80 (100.0)
LEVEL OF EDUCATION	NONE	1 (1.2)
	PRIMARY	23 (28.7)
	SECONDARY	36 (45.0)
	TERTIARY	20 (25.0)
	Total	80 (100.0)
ESTIMATED GESTATIONAL AGE	<28WEEKS	15 (18.7)
	28-31	37 (46.2)
	32/33	9 (11.2)
	34-36	19 (23.7)
	Total	80 (100.0)

In this study, majority of the parturients were aged between 30-34 and ≥35 years with a mean age of 30.4±6.07 years. The modal parity group was para 1-4 with a mean parity of 1.48±1.55. The parturients mostly had secondary level of education with the majority presenting at 28 – 31weeks gestation.

Table 2: Risk factors for Preterm rupture of membrane

RISK FACTORS	N (%)
NONE	26 (32.5)
UTI	11 (13.8)
MALARIA	12 (15.0)
MULTIPLE GESTATION	5 (6.3)
ANAEMIA	7 (8.8)
PREECLAMPSIA/ECLAMPSIA	11 (13.8)
CONGENITAL ANOMALY	1 (1.3)
RVD	6 (7.5)
SICKLE CELL DISEASE	1 (1.3)
Total	80 (100)

No apparent clinical risk factor for PROM was identified in majority of the parturients.

Table 3: Mode of delivery of Parturients with preterm rupture of membranes

Variables		N	(%)
INDUCTION OF LABOUR	YES	33	(41.2)
	NO	47	(58.8)
	Total	80	(100.0)
MODE OF INDUCTION	OXYTOCIN	21	(63.6)
	MISOPROSTOL	12	(36.4)
	Total	33	(100.0)
MODE OF DELIVERY	VAGINAL DELIVERY	43	(53.8)
	CAESAREAN SECTION	37	(46.2)
	Total	80	(100.0)
INDICATION FOR CS	2 PREVIOUS CS	2	(5.4)
	FETAL DISTRESS	8	(21.6)
	TRANSVERSE LIE	3	(8.1)
	CORD PROLAPSE	1	(2.7)
	BREECH PRESENTATION	8	(21.6)
	SEVERE OLIGOHYDRAMNIOUS	7	(18.9)
	CHORIOAMNIONITIS	4	(10.8)
	SEVERE PRE ECLAMPSIA/ECLAMPSIA WITH UNFAVOURABLE CERVIX	2	(5.4)
	RVD	1	(2.7)
	MULTIPLE GESTATION	1	(2.7)
	Total	37	(100.0)

Majority of the parturients were not induced, however where this was done, oxytocin was mainly used. More than half of the parturients delivered vaginally while the commonest indications for a caesarean section were fetal distress and breech presentation.

Table 4: Perinatal outcomes in Parturients with preterm rupture of membranes

Variables		N (%)
BIRTH WEIGHT (kg)	<1	9 (11.2)
	1-1.49	36 (45.0)
	1.5-2.49	29 (36.2)
	≥2.5	6 (7.5)
	Total	80 (100.0)
APGAR SCORE IN 1ST MINUTE	≤3	12 (15.0)
	4/5	18 (22.5)
	6	12 (15.0)
	≥7	38 (47.5)
	Total	80 (100.0)
APGAR SCORE IN 5TH MINUTE	≤3	4 (5.0)
	4/5	8 (10.0)
	6	4 (5.0)
	≥7	64 (80.0)
	Total	80 (100.0)
GENDER	F	41 (51.2)
	M	39 (48.8)
	Total	80 (100.0)
PERINATAL MORTALITY	YES	15 (18.8)
	NO	65 (81.2)
	Total	80 (100.0)

The modal age group was 1 – 1.49kg with a mean birthweight of 1.53±0.52kg. Majority of the preterm neonates had first and fifth minute Apgar scores greater than 7. The mean Apgar score in the first minute was 6.09±2.23 and 7.91±2.26 in the fifth minute. Perinatal mortality was 18.8%. Females comprised more than half of the neonates delivered, majority of whom were alive at the end of the first week post-delivery.

Discussion

The global incidence of PPROM has been noted in studies to be 1-3% of all pregnancies. The incidence of PPROM in this study was 5.7% which is higher than the global incidence and that reported in Enugu, Oshogbo and Ethopia[1,8,14]. However, this was less than the incidence reported by Shehla et al. in Pakistan1. Wider variations in incidence has be shown, as an incidence of 2-18% had also been reported[14]. Therefore, the incidence in this study is not out of place.

Majority of the patients were > 30 years of age. This finding corroborated with Stuart et al who reported that the incidence of PROM rose with advancing maternal age 14. However, this contradicts the finding noted in the study by Okeke et al, and Emechebe in Nigeria 8,9 .Among the total study population 62.5% were multigravida while 26% were primigravida. This was similar to findings in the study by Osaikhuwuomwan and Osemwenkha but contradicts that of Okeke, Diraviyam and Biniyam et al where majority were primigravida[1,2,5,8]. This study showed that 45% of the patients had secondary level of education with majority presenting at a gestational age of 28-31 weeks. PPROM has been associated with low socioeconomic status4. Studies have shown various risk factors associated with PPROM such as a previous history of PPROM, smoking, black race, multiple gestation amongst others[4,10]. However, in this study, majority of the parturients had no obvious risk factor at presentation. This was similar to the study done in Calabar[9].

The management of pregnancies complicated with PPROM is highly controversial and challenging in contemporary obstetrics and as such, it should be individualized[1]. Conservative management has been advocated in a bid to improve fetal outcome[16]. Administration of adjunctive prophylactic antibiotics as well as single course of steroids (for fetuses < 34 weeks gestational age) is one of the interventions known to improve obstetric outcome[11]. The goal of antibiotic therapy is to reduce the frequency of maternal and fetal infection and delay the onset of preterm labour (i.e., prolong latency period) while the steroids reduce the incidence of respiratory distress syndrome[12,17]. A recent study by Morris et al showed that in the absence of overt signs of infection or fetal compromise, a policy of expectant management with appropriate surveillance of maternal and fetal wellbeing should be followed in pregnant women who present with ruptured membranes close to term[15]. Parturients in this study were conservatively managed.

A total of 53 % of the patients had vaginal delivery whereas 37% had caesarean delivery. The incidence of higher vaginal delivery rate was similar to the findings by Emechebe et al and Nagaria et al 9,7. Thirty three percent had induction of labour with oxytocin being the commonest agent used in 63.6% of the patients , similar to the study by Adeniji14.The caesarean section rate of 37 % in this study was higher than that of 35.4% reported by Emechebe 9. Fetal distress and breech presenting foetus was the commonest indication for caesarean section.

With respect to fetal outcome, 81.2% of the babies were low birth weight with 36.2 % being within the very low birth weight category. This was also noted in studies by Okeke, Nagaria and Diravyam[2,7,8]. The implication of such a high number of low birth weight is that this would burden the neonatal intensive care facilities and personnel in the hospital and may affect the neonatal outcome adversely. This study showed that majority of the babies had good Apgar scores in the 1st and 5th minute. This may be due to the fact that a course of steroids was given to reduce

the rate of respiratory distress syndrome [13]. Perinatal mortality in this study was 18.18% which is similar to that in Lagos but lower than 21.7% reported by Khan[3,10].

The major limitation of this study is it was a small scale retrospective study and it was not possible to analyse the indication for NICU admissions due to incomplete information in the medical records. Thus the findings of this study may not truly reflect the situation in the general population. Despite the limitations, this study has provided baseline information on PPROM in our locality and is a stepping stone towards further research on PPROM among Nigerian women.

Conclusion

PPROM is a major complication of pregnancies and an important cause of perinatal morbidity and mortality as seen in this study. Prompt diagnosis and management is required for good fetomaternal outcome. At earlier gestation, conservative management with careful surveillance should be adopted to improve fetal survival rates and this can be further achieved by multidisciplinary approach involving the obstetrician and the neonatologist.

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Impact of Free Maternity Service on Caesarean Acceptance and Perception in Delta State. South South Nigeria

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Abstract

Background. Although the Increasing rate of Caesarean section has remained a source of concern in different part of the world, it nevertheless remains an important intervention in the reduction of maternal and perinatal mortality during childbirth. Women in developing countries remain averse to caesarean section. The contribution of cost to caesarean section acceptance and perception is not clear.

Aims. To determine the impact of cost-free maternity service on caesarean section acceptance and perception in Delta State**. Setting and design.** A cross-sectional descriptive study**.**

Subjects and Method. A structured questionnaire was administered to a total of 600 consenting antenatal women, in two secondary health facilities in Delta State**,** Eku Baptist Government Hospital(EBGH) and Central Hospital Warri (CHW).

Statistical Analysis. Statistical Package for Social Sciences version 24. With descriptive statistics for frequency, mean and standard deviation. Chi-square and student's t-test for comparison of variables. Level of significance set as $p<0.05$.

Results. There was no significant difference in the proportion of respondents that have had previous Caesarean section in the two centers, 20.6% and 20.9% at Eku Baptist Government hospital(EBGH) and Central Hospital Warri(CHW) respectively. Caesarean section was acceptable to a large number of the respondents, 60.6% and 68.3% at EBGH and CHW respectively. Average of 15.8% respondents will not accept caesarean section for any reason. Postoperative pain was the major reason of respondents objecting to Caesarean section in both centers, 38% and 20.5% at EBGH and CHW respectively**.**

Conclusion. This study revealed a high level of caesarean section acceptance among pregnant women under free maternity service policy. The need for well informed and continuous health enlightenment during the antenatal visits is required to overcome the negative perception about CS.

Key words. Free maternity service, Caesarean section, Perception

Running Title: Odunvbun, *et al*: Free Maternity Service…….

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Introduction

Caesarean section refers to the delivery of the viable foetus through a surgical incision on the uterus[1] It is perhaps, the most common major obstetric surgery globally[2] . Inspite of WHO recommendation of 15% for CS, there is global increase in rates.[3,4] In Nigeria, though rate as high as 34.5% has been reported in a tertiary health facility, in the Niger Delta[5] This high rate was largely due to the high proportion of the unbooked emergency cases[5]. Women in developing countries remain averse to CS,[6,7] despite being an important life-saving intervention.

Caesarean section is a major obstetric procedure that is paid for by the patients in most health facilities in Nigeria. It is argued that due to the current safety of the procedure, several CS are done for both justifiable medical and non-medical indications and occasionally for monetary incentives[7,8]. What has not been widely researched is the impact removal of user-fee will have on caesarean section acceptance and perception in Nigeria.

A policy of free maternity service was introduced by the government of Delta State, South South Nigeria, in the year 2009. This was after the high caesarean section rate documented by Igberase et al[5], in a 10- year review of deliveries in the Niger Delta region of Nigeria, a period in which women paid for maternity services. By this new policy, all aspects of antenatal, intrapartum and post-natal services became cost-free. This included free ultrasound and laboratory services. This policy that has resulted in an increase in both antenatal attendance and delivery rates in all government secondary health facilities in the State.

The aim of this study is to determine the impact of free maternity services to caesarean section acceptance and perception among antenatal women in Delta State. The findings from this study may help address the contribution of cost to caesarean section acceptance and perception and serve as a partial audit of the state's policy on cost-free maternity service.

Materials and Method

This study was conducted in two secondary health facilities in Delta State, Eku Baptist government hospital(EBGH) and Central hospital Warri(CHW).

EBGH is a rural secondary health facility with 160 beds. It has 20 beds in it's maternity ward. It is located within 10 kilometers of the state owned university, Delta State University. It has two consultant obstetricians. It has a residency training program in Family Medicine. It is a referral health facility in the area, traditionally drawing patients from other villages and cities in Delta State.

CHW is a 254-bed secondary health facility located in a densely populated commercial capital of Delta State, Warri. It has 4 consultant obstetricians, among other specialists. It has about 47 beds in her maternity section. This is made up of labour wards(16 beds), maternity/post natal ward(31 beds).

Subjects

The study population consisted of consenting pregnant women attending antenatal clinics in both health facilities in Delta State, from September 3, to December 3, 2018. Participants were assured of confidentiality and told that refusal to participate will not affect their care.

Only those that required emergency consultation because of their health conditions and women who did not give their consent were excluded.

Study design

This was a cross sectional descriptive study on impact of free maternity service on Caesarean section acceptance and perception. Sample size for this study was calculated from the formula: $n= z^2pq/d^2$ where z is the standard deviation set 1.96, with confidence interval set at 95% , and error margin, d at 5%, q =1-p. P is the prevalence (rate of 13.4% for women who rejected caesarean section in a recent study in Abakalike.[7]

The minimum sample size was calculated to be 178.3. A total sample size of 600 was used for the two study centers, to add strength to our study, 300 in each center.

Research Instrument

A structured interviewer-administered questionnaire was used to assess sociodemographic variables, as well as information on previous deliveries, CS acceptability and reasons for objecting to CS. Questionnaires were administered by Consultants obstetricians, Resident doctors in Family medicine and Obstetrics and Gynaecology. The questionnaires were anonymised.

Ethical approval was obtained from ethics committee in both institution and informed consent from all participants.

Data Analysis

Statistical analyses was performed using IBM SPSS Statistics 24.0 software (IBM Corporation, NY, USA). Frequency, percentage, mean and standard deviation were used to describe the dataset. For comparisons involving categorical variables, the ^{2} test or Fisher's exact test (for expected counts less than five) was applied; while comparisons involving continuous variables, the independent samples t-test was applied. The level of significance was set at $p<0.05$.

Results

A total of 536(89.3%) questionnaires were suitable for analysis.

Table 1 Shows the demographic characteristics of respondents

The ages of respondents at both center ranged from 15 to 45 years. The mean age of respondents at the rural health facility at Eku was 29.21±5.35 years. They were significantly younger than the antenatal respondents at the WCH, who were 31.23±5.03 years. Over 80% of respondents (83.9%) at the Warri center were less than 35 years. More respondents (36.9%) were in the age range 25-29 years at the Eku Health facility, compared with WCH that had more respondents (35.7%) in the age bracket of 30-34 Years. Only 6(2.1%) and 12(4.8%) were above 40 years at the Eku and Warri health facilities, respectively.

More respondents had tertiary level of education at Eku compared to Warri, 46.0 % versus 40.2%. More of the respondents (48.6%) had secondary level of education in Warri. Only 3 (1.0%) and 8(3.2% had no formal education at the Eku and Warri facilities, respectively.

In both centers, business accounted for majority of respondents occupation, with 34.5% (99/287) and 31.7% (79/249) in Eku and Warri respectively. There was a similar proportion of housewives in both centers, 11.1% and 12.4% in Eku and Warri. (Table 1.)

Table 1: Distribution of demographic data of respondents in study centers

	Eku	Warri	Test-statistics	p
Age group				
18-27yrs	113(39.4)	60(24.1)		
28-37yrs	156(54.4)	159(63.9)		
38-47yrs	16(5.6)	30(12.0)		
48-57yrs	2(0.7)	0(0.0)		
Mean age:	29.21±5.35	31.23±5.03	4.494	0.000
Level of Education				
No formal education	3(1.0)	8(3.2)		
Primary	42(14.6)	20(8.0)		
Secondary	110(38.3)	121(48.6)		
Tertiary	132(46.0)	100(40.2)		
Occupation				
House wife	32(11.1)	31(12.4)		
Trader	58(20.2)	67(26.9)		
Artisan	48(16.7)	23(9.2)		
Business	99(34.5)	79(31.7)		
Civil Servant	1(0.3)	1(0.4)		
Professional	49(17.1)	48(19.3)		

Student t-test

More respondents, 84.3%(210/249) at the Warri center have had previous pregnancy experience, compared with 67.9%(195/287) at Eku. Over 30% of respondents were primigravidae at Eku versu 15.7% in warri. These differences was significant(P -value 0.000)

Previous CS among respondents in both centers was similar 20.6% versus 20.9 % in Eku and Warri, respectively. Caesarean section was acceptable to a large number of the respondents in both centers, 60.6(174/287) versus 68.3% (170/249) in Eku and Warri, respectively(Table 2)

Table 2: Distribution of respondents according to Previous pregnancy history, Previous CS history and CS Acceptance.

	Eku	Warri	$\chi 2$	p
Previous Pregnancy				
Yes	195(67.9)	210(84.3)	19.402	0.000
No	92(32.1)	39(15.7)		
Previous CS				
Yes	59(20.6)	52(20.9)	0.009	0.926
No	228(79.4)	197(79.1)		
Acceptability of CS				
Yes	174(60.6)	170(68.3)	3.390	0.066
No	113(39.4)	79(31.7)		

About 60% (172/287) of the respondents at Eku will not object to CS, if the decision is taken by their doctor followed by 24.0% who will accept the decision if it is an emergency. Women at the Warri center were more likely to accept CS for various reasons, ranging from when advised by their doctors(77.9%), to when it is an emergency(71.5%), if partner approves(64.7%) and when endorsed by their pastors(53.4%). CS will never be an option in 14.3% and 17.3% of the respondents, at Eku and Warri centers respectively.(Table 3)

Table 3: Distribution of attitude of respondents towards CS acceptance

	Eku	Warri
It is acceptable to me when advised by my doctor	172(59.9)	194(77.9)
I will accept it if my husband approves	33(11.5)	161(64.7)
I will accept if my pastor approves	14(4.9)	133(53.4)
i will accept it if it is emergency C/S	69(24.0)	178(71.5)
i will accept it if it is elective C/S	14(4.9)	106(42.6)
I will never accept C/S no matter what	41(14.3)	43(17.3)

The leading (38%) reason for respondents at Eku, objecting to CS is because of pain following surgery, followed by 19.5% of respondents who felt CS was against their cultural belief, 16% felt it may prolong their hospital stay, 15% saw surgery for childbirth as a mark of failure as a woman, 11.5% felt CS will limit the number of children they may have. A few (4.4%) felt CS will prevent early breastfeeding of their baby. At the Warri center, reasons adduced for objecting to CS were: Pain(20.5%), reduced number of children(17.3%), prolonged hospital stay(17.3%), failure as a woman(14.5%), delay in breastfeeding (12.9%) and lastly, cultural factor, 12.0% (table 4).

Table 4: Distribution of reasons for objecting to C/S in study centers

	Eku	Warri	χ^2	p
C/S is a mark of failure as a woman	43(15.0)	36(14.5)	.0029	0.864
It's more painful than normal vaginal delivery(Post-op.)	109(38.0)	51(20.5)	19.493	0.000
It will not allow me breastfeed my baby early	12(4.2)	32(12.9)	13.301	0.000
It will reduce the number of children I might have	33(11.5)	43(17.3)	3.649	0.056
It will prolong my stay in hospital	46(16.0)	43(17.3)	.0148	0.700
It is against my cultural/tribal belief	56(19.5)	30(12.0)	5.514	0.019

Discussion

Average of 21% (111/536) of our respondents in both study centers have had CS in the past for various reasons. A total of 16 respondents from both centers will not accept a repeat caesarean section in future. The major reason for this decision, was post -operative pain. The proportion of women with previous CS in our

study is much higher than the 8.6% and 10% documented in studies from Abakalike.[7,8] In a study conducted in Enugu[9], 7.22% of respondents have had CS in the past. While the exact reasons for the high previous CS in this study may not be obvious, it is important to note that the removal of user fee for delivery service may be a contributory factor. In addition, both centers serve as referral health facilities to other public and private health facilities in the region.
Caesarean Section was an acceptable mode of delivery for average of 64.5% (344/536) of respondents: 60.6% and 68.3% at Eku and Warri health facilities respectively. A study conducted over a decade earlier in a tertiary health facility in Benin City reported 6.1%,[10] CS acceptability as a method of delivery and 81% of the study respondents, would accept CS if needed to save their baby. Another study from South Western Nigeria, also in a tertiary health facility had 85% of the respondents, favourably disposed towards CS. In Kumasi Ghana, 90.5% of study participants would accept CS if indicated. These high rates of positive disposition towards CS, perhaps reflects the confidence our women now have in the safety of the surgical procedure. A negative attitude was however expressed towards CS, by 14.3% and 17.3% among respondents at Eku and Warri health facilities respectively. These respondents would not accept the option of CS delivery for any reason. This finding is similar to the 12.1% and 13% reported in Benin[10] and Enugu[9] respectively. In a study over a decade earlier, at Ilesa by Orgi et at[11], some of the respondents felt CS was a punishment for marital infidelity, while others think it was the devils work.

The major reason for objecting to CS in both centers was pain. Average of 30% % of respondents from both centers considered the pain from CS, greater than vaginal delivery. The perception of post operative pain can be addressed during the antenatal period by adequate enlightenment of women on pain management in vaginal and caesarean delivery. Other reasons for objecting to CS, among respondents included, prolong stay in hospital, cultural factors, CS seen as mark of reproductive failure, CS may affect early breasting and reduction of family size. These reasons have also been cited in previous studies.[8,9,11.] Overcoming negative perception towards CS, remains an important aspect of well-informed antenatal health enlightenment. This remains an aspect of maternity service that requires more emphasis.

In conclusion, this study revealed a high level of CS acceptance among pregnant women in Delta State, under the policy of free maternity service. The need for well informed and continuous health enlightenment during the antenatal visits is required to address some negative perception about CS among some of our women.

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Profile of Blood Pressure Control and Other Comorbidities Among Medical Outpatients Attending A University Teaching Hospital, South-South Nigeria

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Abstract

Background: Hypertension is the commonest non-communicable diseases worldwide. Patients suffering from this condition may also have other co-morbidities.
Aim: To show the profile of blood pressure control among patients attending the Consultant Medical Out-Patient Department (MOPD).

Methodology: A retrospective descriptive study of MOPD clinic attendees with hypertension. Patients aged 18 years and above who had both their first and sixth clinic visits between November 2012 and November 2013 were recruited for the study.

Results: A total of 150 subjects were enrolled with a mean age 58.3±13.0 years, and 68 (45.3%) were males. The mean SBP, DBP and pulse rates at first and sixth visits were 145.8(±23.3) mmHg, 87.8(±14) mmHg and 83.1(±15.1) bpm, and 138.0(±22.9) mmHg, 84.5(±12.9) mmHg and 80.9(±13.4) bpm, respectively. By the third clinical visit, 67% of the study population had attained target blood pressure control.
One hundred and fourteen (76.0%) of the study population had co-morbidities and complications (diabetes, dyslipidaemia, heart failure, hypertensive heart disease).
All the patients with dyslipidemia were placed on lipid lowering drugs but no repeat test was done during the study period.
About 7.3% of the population had adverse drug reactions such as headaches, dizziness, generalized body pains and nausea.

Conclusion: Only 67% of the subjects attained target blood pressure control by the third visit. There is need for more aggressive approach in managing patients with hypertension. It is important to document adverse drug reactions and follow the recommended pharmacovigilance protocol.

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Background

Cardiovascular diseases are a common and important global public health challenge. It accounts for nearly a third of all-cause mortality worldwide and is the commonest non-communicable disease in developing countries like Nigeria.[1-5] Patients suffering from this condition also have other co-morbidities such as diabetes, dyslipidemia, arthritis etc.[5] The treatment for hypertension is lifelong and it has been shown that a number of patients do not achieve control of blood pressure for several reasons.[6-12] Drugs used to treat this condition have been shown to have some side effects and there are possibilities of drug- drug interactions especially with most patients needing more than

one antihypertensive medication with these effects occurring due to factors such as age, presence of comorbidities and subsequent multidrug therapy arising from their presence.[13,14]

It is sad that a large population of people in Nigeria are currently undiagnosed and it is sadder still that amongst those diagnosed only a few have their blood pressure controlled.[15] The major problem is attributed to lack of adherence to medications on the side of patients as many patients dislike the use of anti-hypertensives and the presence of a high blood pressure that is usually asymptomatic.[16] Other contributing factors may be inadequate assessment and adherence to standard treatment guidelines on the part of the managing physician or both.[17] Furthermore is the role of healthcare systems that are not optimally functional in Nigeria.[17]

The healthcare system usually points the finger at the patients blaming them for their poor blood pressure control. Some of these patients have co-morbidities that are poorly addressed by physicians with some patients being cared for by poorly trained medical personnel especially in local community settings. Previous studies have argued that blood pressure control should be individualized to determine the desired cut off for each patient using a host of clinical criteria to accommodate for scenarios where the target blood pressure control cannot be fully achieved such as in some patients with resistant hypertension, co-morbid terminal illnesses and diabetes.[12,18-20] Currently, how much of percentage control is achieved is unknown to physician with percentage control varying from country to country with very poor performances recorded in developing countries like Nigeria.[21] The availability of such data will help clinicians evaluate their methods including nutrition and diet counselling / lifestyle modifications as well as antihypertensive therapy and towards expectations in patient with comorbidities. The unanswered question is with the current trends and management protocols how much control have we achieved for our patients? Are we winning? Are we factoring in the presence of comorbidities individualized to patients?

This study seeks to assess the profile of blood pressure control among patients with or without existing comorbidities attending consultant medical outpatient clinic with focus on how many patients were able to meet with blood pressure targets and controls on assessments during follow up visits.

Methodology

The study was carried out in Delta State University Teaching Hospital (DELSUTH), Oghara, Ethiope West Local Government area of Delta State, Nigeria. It is the only tertiary hospital owned by the Delta State Government and serves as the main referral hospital within the State. Patients are also referred to DELSUTH from the neighboring States of Edo and Bayelsa.

This is a descriptive cross-sectional study. We retrospectively studied hypertensive patients on antihypertensive medications with or without co-morbidities who had visited the consultant medical outpatient department (MOPD).

All adult patients aged ≥18years who are hypertensive irrespective of duration of diagnosis and presence of co-morbidities, presenting in DELSUTH MOPD for the first time within the period of November 2012 to November 2013, on antihypertensive medications and had at least 6 clinic visits within this period were recruited for the study.

Patients who were aged less than 18 years, and those who have attended the MOPD for a period less than one year as well as those having less than 6 clinic visits within the year of interest were excluded from the study. Individuals with mild hypertension who were receiving dietary /lifestyle modification, but not on anti-hypertensive medications were excluded from the study. The first clinic visit is notably the next visit after a

patient has been placed on antihypertensive medications in the previous visit and not necessarily the first day the patient presents to the clinic.

Hypertension was defined as a systolic blood pressure ≥140mmHg or a diastolic blood pressure of ≥ 90mmHg.[22] The goal/target of blood pressure control for the age range studied was said to be achieved if the clinic blood pressure was <140/90mmHg for all patients including hypertensive-diabetics.[22]

Subjects who met the inclusion criteria were recruited for the study. A structured proforma was used to capture data from the patients' medical records. Sociodemographic data on age, sex, ethnicity, marital status, religion and occupation were obtained from the case note. The blood pressure readings and pulse rates for the clinic visits of interest were also obtained from the case notes. For each subject, the duration of hypertension, the working diagnosis and the presence of co-morbidities were noted. Fasting blood sugar and fasting serum lipid profile levels were recorded from the case notes.

The presence of diabetes mellitus was defined as fasting blood sugar ≥126mg/dl while good glycaemic control was set at a random blood sugar of 140mg/dl or glycated haemoglobin (HbA1C) <6.5%.[23] The cut-off levels for abnormal total cholesterol, high density lipoprotein (HDL), low density lipoprotein (LDL) and triglyceride (TAG) necessitating specific interventions were set at >240mg/dl, <40mg/dl, >160mg/dl and >150mg/dl, respectively.[24]

Ethical approval was sought and obtained from the Health Research Ethics Committee of the Delta State University Teaching Hospital, Oghara.

Data Analysis

The data obtained was entered and analyzed using Statistical Product and Service Solutions (SPSS) version 22.0 software (SPSS Inc. Chicago, Illinois, USA). Categorical data were expressed as frequencies and percentages while numerical data were expressed as mean and standard deviation. Means were compared using the independent t-test. A p-value of <0.05 was considered statistically significant. Tables and charts were drawn using Microsoft Excel 2010.

Results

A total of 150 subjects were recruited for this study with a male to female ratio of 1:1.2. The age distribution of subjects is shown in figure 1. The age range of the subjects was 25 – 105 years with a mean age of 58.3 (±13.0) years.

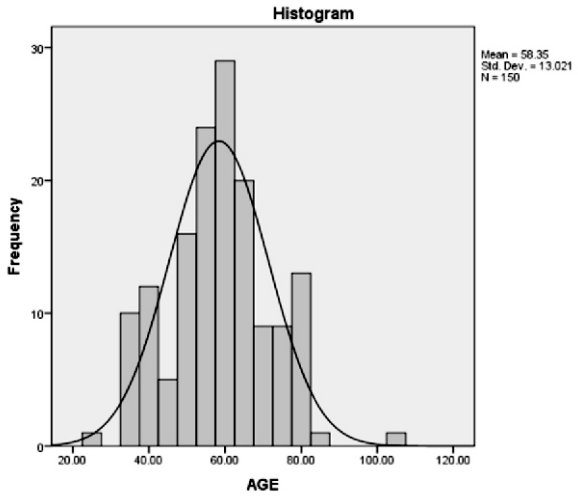


Figure 1. Age distribution of Subjects

Table 1 shows the socio-demographic characteristics of the study population. About one-third of the study participants were in the 50-59 years age bracket. Majority of the study population were Urhobos (70.0%) and businessmen or traders (42.7%). One-fifth of the study population were unemployed.

Table 1. Sociodemographic characteristics of study population

Variable	Category	Frequency [n (%)]
Age Group (years)	<30	1 (0.7)
	30 – 39	13 (8.7)
	40 – 49	18 (12.0)
	50 – 59	52 (34.7)
	60 – 69	38 (25.3)
	70 – 79	20 (13.3)
	-	8 (5.3)
Sex	Male	68 (45.3)
	Female	82 (54.7)
Ethnicity	Urhobo	105 (70.0)
	Isoko	5 (3.3)
	Ijaw	10 (6.7)
	Itsekiri	10 (6.7)
	Ibo	10 (6.7)
	Others	10 (6.7)
Occupation	Business/Trading	64 (42.7)
	Civil service	15 (10.0)
	Driving	10 (6.7)
	Farming/Fishing	10 (6.7)
	Teaching	21 (14.0)
	Unemployed	30 (20.0)

Biophysical profile

At the first clinic visit, majority (66.7%) of the study participants had systolic blood pressure (SBP) ≥140mmHg while 46.0% had diastolic blood pressure (DBP) ≥90mmHg. (Table 2)

The mean (±SD) values for total cholesterol (TC), high density lipoprotein (HDL), low density lipoprotein (LDL) and triglycerides (TAG) obtained in this study were 197.55 (±43,06) mg/dl, 56.62 (±14.57) mg/dl, 117.5 (±43.98) mg/dl and 117.14 (±43.78) mg/dl, respectively. Dyslipidaemia was noted in 56 (37.3%) of the subjects.

The frequency of abnormal lipid profile parameters (TC, HDL, LDL, TAG) is as shown in table 2.

Table 2: Biophysical profile of study participants at first visit

Variable	Category	Gender Distribution		Total (%)
		Male	**Female**	
Age Group (years)	<30	1	0	1 (0.7)
	30 – 39	5	8	13 (8.7)
	40 – 49	11	7	18 (12.0)
	50 – 59	19	33	52 (34.7)
	60 – 69	14	24	38 (25.3)
	70 – 79	12	8	20 (13.3)
	≥80	6	2	8 (5.3)
SBP (mmHg)	<120	4	6	10 (6.7)
	120 – 139	18	22	40 (26.7)
	140 -159	24	21	45 (30.0)
	≥160	22	33	55 (36.7)
DBP (mmHg)	<80	16	19	35 (23.0)
	80-89	23	22	45 (30.0)
	90-99	11	24	35 (23.0)
	≥100	18	17	35 (23.0)
Pulse rate (bpm)	<60	1	4	5 (3.4)
	60 – 100	58	67	125 (83.3)
	>100	9	11	120 (13.3)
Abnormal lipid profile (mg/dl)	TC (>200)	25	26	51 (34.0)
	HDL (<40)	15	16	31 (20.7)
	LDL (>160)	22	16	38 (25.3)
	TAG (>150)	19	19	38 (25.3)

DBP: Diastolic Blood Pressure, **SBP:** Systolic Blood Pressure, **HDL**: High Density Lipoprotein, **LDL:** Low Density Lipoprotein, **TAG:** Triacylglyceride, **TC**: Total Cholesterol.

Attaining Blood Pressure Control

The mean (±SD) systolic blood pressure, diastolic blood pressure and pulse rate were 145.8 (±23.3) mmHg, 87.8 (±14) mmHg and 83.1 (±15.1) bpm respectively at the initial clinic visit and 138.0 (±22.9) mmHg, 84.5 (±12.9) mmHg and 80.9 (±13.4) bpm respectively at the sixth clinic visit. The mean difference in systolic and diastolic blood pressures of subjects between their first and sixth clinic visits were statistically significant [SBP: t= 2.911 (95%CI = 2.516 – 13.018), p=0.004; DBP: t=2.105 (95% CI = 0.213 – 6.334), p = 0.036).

About two-thirds of the study population attained normal blood pressure control by their third clinic visit while 3% attained control at their sixth clinic visit. (Figure 2)

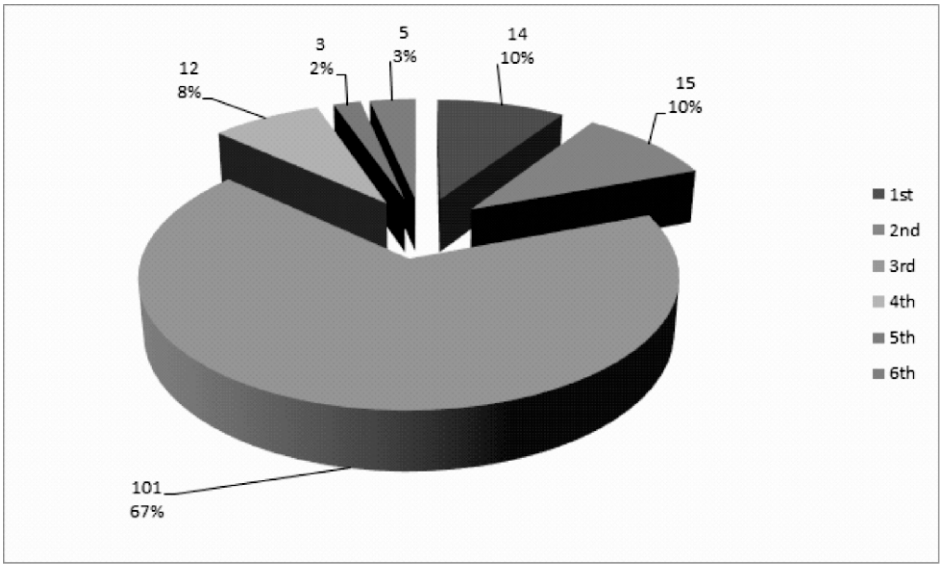
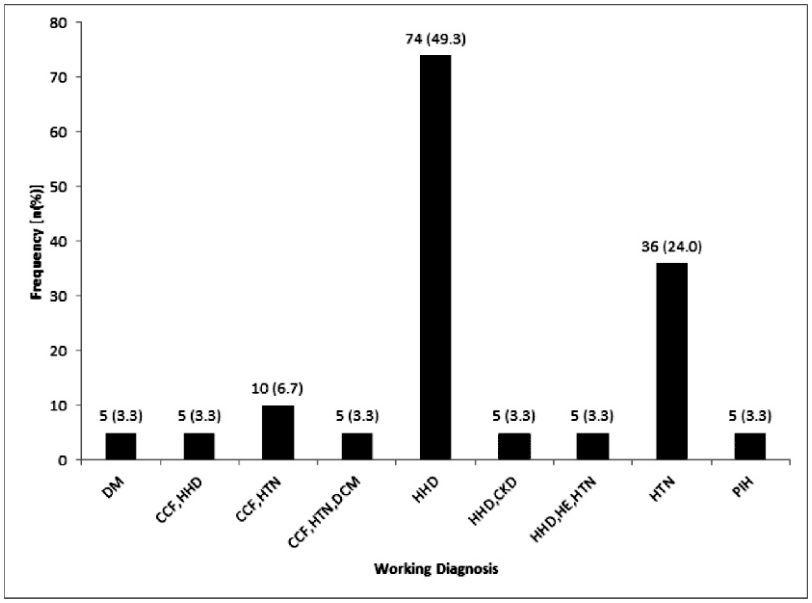


Figure 2. Number of Clinic visits before attaining normal blood pressure control

Co-Morbidities

Co-morbidities and drug-related adverse effects also had roughly equal frequency among males and females of the population with their peak frequency within the 50-59 years age group.

At presentation, 36 (24.0%) of the study population had uncomplicated hypertension with no other co-morbidities. Figure 3 shows the working diagnosis of the study population at their first visit.



CCF=Congestive Cardiac Failure; CKD= Chronic Kidney Disease; DCM= Dilated cardiomyopathy, DM =Diabetes;

HHD= Hypertensive Heart Disease; HE= Hypertensive Encephalopathy; HTN= Hypertension; PIH= Pregnancy Induced Hypertension; .

Figure 3. Showing the working diagnosis among study participants

Adverse Drug Reaction

Less than one-tenth of the study population had adverse drug reactions to antihypertensive medications. (Figure 3). Amongst the adverse effects recorded were headaches, dizziness, generalized body pains and nausea. None of these adverse effects were reported as per pharmacovigilance protocol.

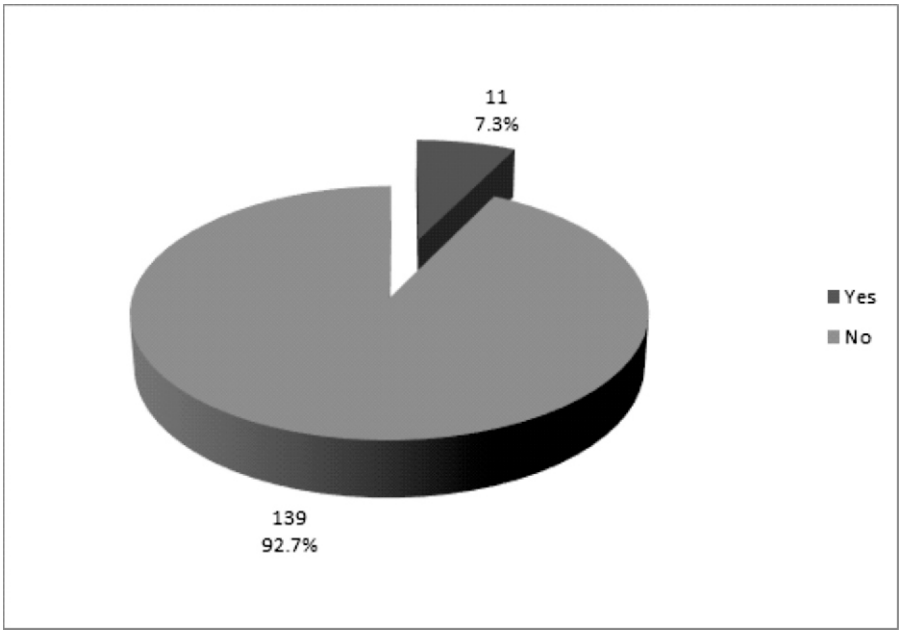


Figure 3: Showing adverse effect to antihypertensive medications among study participants

Discussion

Hypertension in Blacks has long been recognized as occurring earlier in life, more severe and having closer links to pressure-related target organ injury such as left ventricular hypertrophy, chronic kidney disease and heart failure than in Caucasians.[25,26.]

This study revealed a mean age of 58.3 (±13.0) years among the study population. This is similar to findings from other studies in Nigeria.[27,28] Aging is associated with an increased onset of atherosclerosis renovascular hypertension, and renal insufficiency. Thus, hypertension becomes more prevalent as individuals grow older.[29] The age group distribution in this study is unimodal with a single peak and tailing off at extremes of the age groups. This age distribution is however not surprising considering that this study is hospital based. Although not assessed in this study, lack of awareness of hypertension and the danger it portends results in delayed presentation and under-utilization of healthcare facilities, especially by young adults.[28-30]

Similar to previous reports,[31] this study showed a significant reduction in the mean values of systolic and diastolic blood pressures of subjects between the first and the sixth clinic visits for each of the study participant. However, compared to findings by Olanrewaju et al.[31] at University of Ilorin Teaching Hospital the mean difference

between the initial and last SBP and DBP were lower in this study. Their initial and last SBP and DBP were 154(±28) mmHg and 133(±21)mmHg, and 95(±17)mmHg, and 80(±12)mmHg, respectively.[31] The observed difference in blood pressure reduction may be due to the higher starting blood pressures in the Ilorin study.

By the third clinic visit, majority of the subjects in this study had attained target blood pressure control. This however is contradicted by Akpa et al in Port Harcourt, Nigeria who reported a blood pressure control rate of 24.2% at the third clinical visit. The observed lower rate of blood pressure control may be due to the duration of the study rather than poorer blood pressure control. While it was 3 months for Akpa et al.,[32] it was 1 year for the index study. Educational interventions including lifestyle modification are usually instituted and achieved over time.[33] Better blood pressure occurs when patients know more about hypertension which can only be achieved with repeated continuous patient education,[34] a probable reason for the findings in this study.
Seventy six percent of subjects in this study had co-morbidities at presentation. Several reasons may be adduced. Patients with hypertension are often asymptomatic and many are unaware of their blood pressure readings. This is a driver for late diagnosis and presentation with complications. Notably, hypertension seldomly exists without the presence of comorbidities such as diabetes, obesity and dyslipidaemia.[35] Also, the index study was conducted in a tertiary health facility and it is not unexpected for patients with co-morbidities to be referred to such centres for further cardiovascular care.

Although, all the patients with dyslipidemia were placed on lipid lowering drugs none had a repeat lipid profile test done during the study period. This may be due to physician's inertia or lack of finance on the part of the patient to do a repeat test. These inferences are however not generalizable considering the retrospective study design and lack of supportive information from subjects' medical records. Although, some studies have highlighted the fact that it may be expensive for the patients to have regular monitoring of their blood profile and others have stated that most physicians are not used to following standard guidelines in managing patients.[36-39] This certainly portend bad outcome for the patients and poor feedback to the primary care doctor. A study to show the long-term effects of these practices will be crucial as doctors will be better positioned and informed to adhere to standard guidelines.

Also noted is the fact that most of the adverse effects reported were not addressed accordingly. The standard protocol of reporting these cases (pharmacovigilance) was not followed. This again brings to bear the need for primary care physicians to add to the body of knowledge by ensuring accurate reporting of adverse effects from medicines. Some studies have highlighted this problem and recommendations have been made to ensure effective education of doctors on the need to report adverse effects and to make the adverse drug reaction forms readily available to the caregivers.[40,41] Futhermore, it is noteworthy that patients who experience side effects may over report their adherence especially when speaking to a doctor they know.[42,43]

Conclusion

This study shows that 67% of the subjects with hypertension attained target blood pressure control by the third clinic visit. Also, 76% of the study population had documented evidence of co-morbidities (target organ damage and associated clinical conditions) as at presentation. There is need for more aggressive primary and secondary prevention of hypertension through

continuing health education and health promotion activities at various ecological levels.
This study is limited in its retrospective and tertiary hospital-based design. The small sample size in this study also limit the generalization of observations and inferences made.

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Giant Myoepithelioma of the Soft Palate: Report of a case in a Teenage girl

Etetafia MO[1], Nwachokor FN[2]

Abstract:

Background: Giant myoepithelioma is a tumour arising from epithelial cells of mostly the major salivary glands. It is rare in the minor salivary glands .It constitutes less than 1% of salivary gland lesions. It is usually asymptomatic but with increase in size it can elicit pressure and obstructive symptoms as reported in our case.

Case Presentation: This 13-year-old girl presented with swelling on the soft palate for five years. Symptoms included dysphagia, hyper nasal speech, snoring and occasional sleep apnea for two years prior to presentation. Intraoral examination revealed an oval shaped swelling located at the posterior end of the hard palate extending downward and backward pressing on the dorsum of the tongue. CT showed a solid, well-circumscribed oval mass pedunculated at junction of the hard and soft palate. It extended downwards and backwards to the posterior wall of oropharynx. An excisional biopsy was carried out under general anesthesia through the transoral approach. The histology showed myoepithelioma with diffuse infiltrate of plasmacytoid cells. No mitotic figures were seen. The operative site healed without complications. No recurrence three years post op.

Discussion: Myoepithelioma should be distinguished from pleomorphic adenoma because it has been reported to be more aggressive and occasionally transforms into malignant myoepithelioma, though our case was benign.

Conclusion: Myoepitheliomas are rare salivary gland lesions in comparison to pleomorphic adenomas. When large, they can elicit uncomfortable and sometimes dangerous symptoms. They should be considered more in the differential diagnosis of oral lesions in view of their more aggressive nature.

Key words: Myoepithelioma, Plasmacytoid, Giant, Salivary gland.

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Introduction:

Myoepithelioma is a tumor of salivary glands mostly of the major salivary glands. It constitutes less than 1% of salivary gland tumors[1] and it is composed predominantly of myoepithelial cells. The component cells may be spindle-shaped, plasmacytoid, hyaline or epithelioid[2]. Myoepithelial cells are contractile cells found in normal tissues that have secretory functions like the salivary glands, sweat glands, lacrimal glands, prostate and the breasts[3]. Myoepitheliomas are composed completely or almost completely of myoepithelial cells whereas the amount is variable in pleomorphic adenoma[3] Myoepitheliomas frequently affect patients between the fourth and fifth decades of life without gender predominance[3,4].Pediatric cases of myoepitheliomas have also been reported[5,6].The case presented here is a benign myoepithelioma of a minor salivary gland of the soft palate of the plasmacytoid type.

Case Presentation: A 13-year-old girl presented to the hospital in company of her guardian with a 5-year history of swelling in her palate. The swelling was initially small in size but increased gradually until it started affecting her speech, mastication, swallowing and sleep. There was associated snoring while asleep and patient would suddenly jump up from sleep to catch some air at night. The noise of the snoring while asleep became so loud that other siblings became uncomfortable in the same room. Patient gradually resorted to semi solid diet to reduce the discomfort associated with the size of the tumor. Extra oral examination showed a healthy looking young girl who had no obvious respiratory distress but had some distortion of her speech. Intraorally, the mouth opening was good and no obvious pathology on the soft and hard tissues except for a growth located at the posterior end of the hard palate more on the right side [Fig.1]. It was oval in shape and it measured approximately 5.0cm by 4.5cm. It extended downward and backward pressing on the dorsum of the tongue anterior to the vallate papillae. It also extended laterally towards the left side almost covering the anterior wall of the oropharynx. The overlying mucosa appeared very erythematous with visible underlying blood vessels. No ulceration of the overlying mucosa. The lesion was firm in consistency. An initial diagnosis of pleomorphic adenoma was made to rule out other lesions like leiomyoma and schwannoma. The CT of the facial region revealed a solid, well-circumscribed oval mass pedunculated at the junction between the hard and soft palate [Fig.2]. It extended downwards to the posterior one third of the tongue, backwards to the posterior wall of oropharynx and upwards to the lower part of nasopharynx. There was no obvious bone involvement. The patient was prepared for general anaesthesia, consent was obtained and then she was taken to theatre for excisional biopsy. The approach was the transoral route and the lesion was excised from the base and the resultant defect was repaired. The surgical specimen [Fig.3] showed a well-circumscribed encapsulated mass measuring 7.6cm by 6.0cm by 4.0cm.The cut surface showed a variegated appearance. The histology [Fig.4 and Fig.5] showed predominant myoepithelial cells with diffuse infiltrate of plasmacytoid cells. The cytoplasm was eosinophilic with nuclei being hyperchromatic and pleomorphic. Some sections showed elaboration of extracellular mucin. No mitotic figures were present. The post-operative period was uneventful. The operation site [Fig.6] healed without any post-operative complications of defect or fistula. No recurrence up to four years post op.

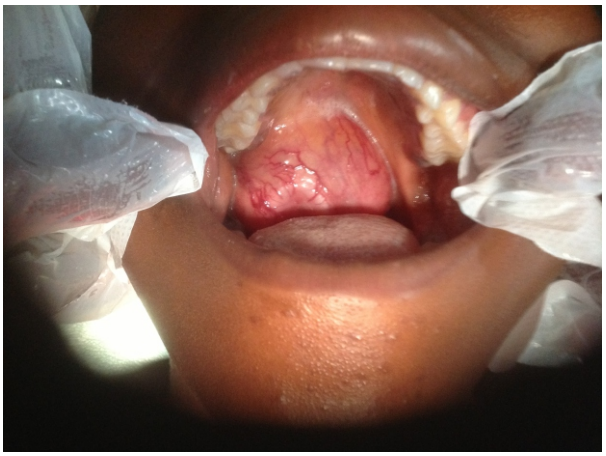

FIG.1-Palatal mass in situ

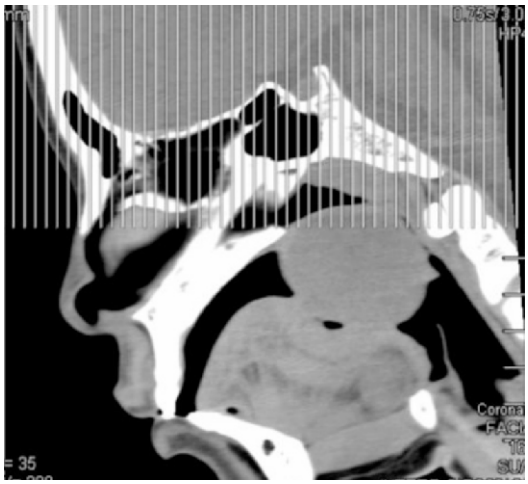

FIG.2-CT Sagittal view

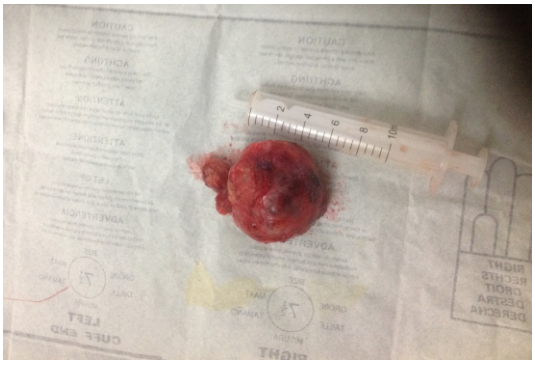

FIG.3-Surgical Specimen

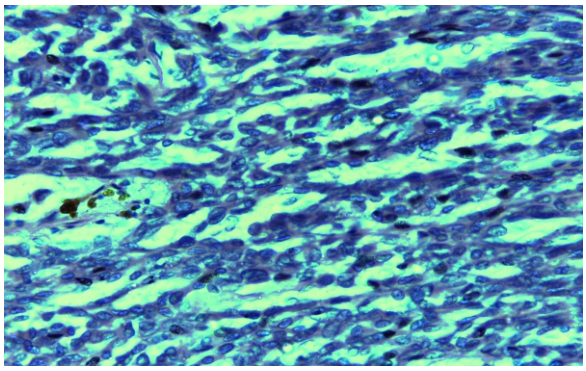

FIG.4-Histology × 200

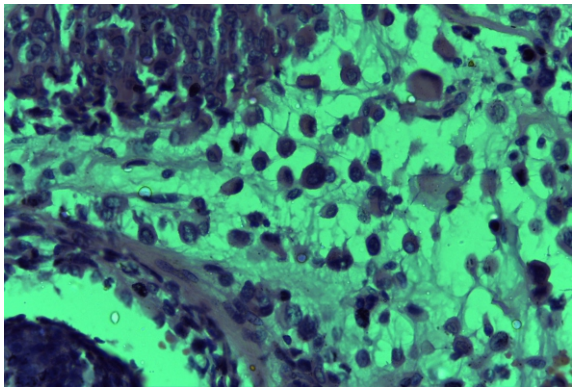

FIG.5-Histology × 400

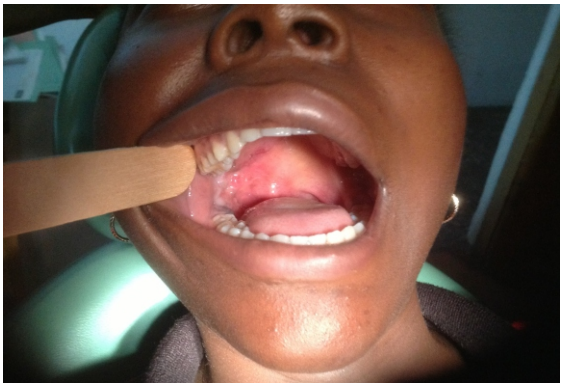

FIG.6-Post Operation site

Discussion: Myoepitheliomas are rare benign tumours of salivary glands, slow growing and asymptomatic in many cases hence the growth to a large size as seen in our case. Over a prolonged period of time the lesion located on the soft palate became very large and elicited symptoms of snoring, hyper nasal speech and sleep apnea. Although most cases of myoepitheliomas are located on the parotid glands[4], rare locations have been seen in the cheek[3], hard palate[7], soft palate[8] maxillary sinus[9], gingivae[1], tongue[10], and upper lip[11].Histopathologically, they consist of spindle-shaped, plasmacytoid, clear, or epithelioid cells.The neoplastic cells, if present, ,are arranged in sheets, irregular collections, nests, interconnecting trabeculae, or ribbons[12]. The benign histologic picture was very dominant in this patient. The neoplastic component was absent. Myoepithelioma should be distinguished from pleomorphic adenoma because it has been reported that myoepithelioma is more aggressive than pleomorphic adenoma and occasionally transforms into malignant myoepithelioma[13] hence, histologic analysis of suspected adenomas is necessary to differentiate between myoepithelioma from the more common pleomorphic adenoma. An author[5] with a contrary view stated that although myoepitheliomas in children may be invasive, it is less aggressive than other tumours. Although immunohistochemical analysis is carried out in most cases of myoepitheliomas, our diagnosis in this case was based on histologic findings. A low grade malignancy has also been reported[3] with a case of myoepithelioma of the minor salivary gland of the cheek. Surgical excision is the method of treatment of benign myoepithelioma with a long term follow up. The prognosis of benign myoepithelioma is considered to be generally good both in children[12] and in adults[3], but malignant changes and local

infiltration do occur[4,8] , hence the need for histopathologic examination and long term follow up of treated cases of myoepitheliomas. Malignant myoepitheliomas should be treated in line with other malignant lesions. A reported case[14] of malignant myoepithelioma of the submandibular gland underwent surgical excision with neck dissection and chemoradiotherapy without signs of recurrence after treatment. The surgical excision of the lesion in our reported case led to the elimination of all the presenting symptoms and there is no recurrence four years post operatively.

Conclusion: Myoepitheliomas are rare benign salivary gland lesions considered to be more aggressive in nature than pleomorphic adenoma. With that in view, they should be considered more in the differential diagnosis of oral swellings to avoid the complications arising from their neglect.

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