Asymptomatic Bacteriuria Amongst the Inhabitants of Okigwe, Imo State Nigeria

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Abstract
The prevalence of asymptomatic bacteriuria amongst the inhabitants of Okigwe was investigated using culture techniques. The predominant bacteria isolated were *Escherichia coli*, *Staphylococcus aureus*, *Klebsiella* species, *Pseudomonas aeruginosa* and *Proteus* species. Out of the 120 urine samples examined 20.8% had asymptomatic bacteriuria. The percentage prevalence was 17.7% and 22.5% for males and females examined respectively. *Escherichia coli* was the most prevalent occurring in 18.2% of the samples while *Klebsiella* species and *Proteus* species that both occurred in 5% of the positive samples were the least. Traders were more affected than students and civil servants. There is need to encourage people to screen for asymptomatic bacteriuria in other to avert the consequences of the subsequent complications.

Keywords: bacteriuria, occupation, prevalence, symptom.

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Introduction
Normally urine and the urinary tract above the entrance to the bladder are essentially free of microorganisms (Nester et al., 2004). Bacteriuria is a condition in which bacteria are present in urine. Asymptomatic bacteriuria is defined as significant bacteriuria when growth of $\geq 10^5$ cfu/ml of freshly voided urine (Umeh et al., 2006; Uwaezuzoke and Ogbulie, 2006). Bacteriuria affects all age groups but women are more susceptible than men due to short urethra, absence of prostatic secretion, pregnancy and easy contamination of the urinary tract with faecal flora (Al- Haddad, 2005). Untreated asymptomatic bacteriuria is a common cause of both major and minor diseases which may sometimes be unresponsive to treatment. Asymptomatic bacteriuria particularly during pregnancy has been associated with acute pyelonephritis, foetal growth restriction and still birth (Amadi et al., 2007). Untreated asymptomatic bacteriuria leads to development of cystitis in approximately 30% of the cases (Kassa, 1980; Gilstreap et al., 1981).

Although asymptomatic bacteriuria may not require treatment because the bacteria may not be causing harm, certain groups of people such as pregnant women and their unborn fetuses may be at risk of complications (Amadi et al., 2007) and can give rise to infection of the kidney or other parts of the urinary tract. This paper reports the prevalence of asymptomatic bacteriuria amongst the inhabitants of Okigwe.

Materials and methods
Population studied:

The population for this study was a randomly selected group of 120 apparently healthy individuals that were either students, traders or civil servants in Okigwe. The study population were of various age groups ranging from 16 to 45 years. The aim of the study was explained to volunteers and other information such as age and occupation were ascertained. Women menstruating at the time of collection were not included in the study.

Collection of specimens and microbiological examination:

Mid stream clean catch urine were collected in sterile disposable universal bottles and examined by the methods of Collin et al., (1989) . A loopful of 5mm wide standard wire containing 0.005ml of urine (Umeh et al.,2006) was inoculated on Mac Conkey agar plate (Fluka),blood agar, Eosin Methylene Blue agar(EMB) (Britania) and Cysteine Lactose Electrolyte Deficient agar (CLED). The plates were incubated aerobically for 24h at 37°C. Only plates that gave counts $\geq 10^5$ cfu/ ml were considered to have significant growth. Pure cultures of each isolate was used for further identification.

Identification of isolates:

The isolates were identified by Gram reaction, motility test, catalase, oxidase, coagulase, indole, methyl red, Voges-prausker,
citrate utilization, H$_2$S production, urease test and growth on Kliger's iron agar (Baron et al., 1990; Cheesbrough, 2000).

**Results**

Out of the 120 specimens examined 25 (20.8%) had asymptomatic bacteriuria. Out of the male population of 49, 9 (17.7%) had asymptomatic bacteriuria while 16 (22.5%) out of 71 females examined had asymptomatic bacteriuria (Table 1). The highest percentage occurrence (33.3%) was amongst the age group 26-30, followed by the age group 21-25 (26.3%) while the age group 41-45 had the least prevalence of 11.1% (Table 2). Traders were mostly affected than students and civil servants (Table 3). The bacteria isolated from the urine samples examined were *Escherichia coli*, *Pseudomonas aeruginosa*, *Klebsiella* species, *Staphylococcus aureus* and *Proteus* species. The most frequently isolated bacteria was *Escherichia coli* (18.2%) while the least was *Klebsiella* species and *Proteus* species that were isolated in 5% of the samples respectively (Table 4).

**Discussion**

The prevalence of 20.8% was observed in the study population, this is within the same range (23%) reported by Umeh et al., 2006. Earlier studies reported lower prevalence rates in healthy populations (Perez and Ferrer, 2004; Uwaezuoke and Ogbulie, 2006). *Escherichia coli* was the most prevalent in this study and accounted for 18.2% of the isolates followed by *Staphylococcus aureus*. This finding agrees with the work of Uwaezuoke and Ogbulie (2006) but does not agree with the findings of Umeh et al., (2006) that reported *Staphylococcus aureus* as the most prevalent organism. Our finding also does not agree with that of Amadi et al., (2007) that reported the trend *S.aureus*, *E. coli* and *Klebsiella* species amongst pregnant women in Abakiliki, Nigeria.

Traders were found to have the highest prevalence rate (32.5%) compared to students and civil servants. This high frequency of asymptomatic bacteriuria amongst the traders could be attributed to high level of illiteracy amongst this group and ignorance of proper hygiene practices. Umeh et al., (2006) observed that toilet habits in the manner of buttocks cleaning after defaecation appeared to be one of the predisposing factors to bacteriuria. Females were mostly affected than men in this study with a prevalence rate of 22.5% compared.

Table 1: Prevalence of Asymptomatic bacteriuria in Okigwe

<table>
<thead>
<tr>
<th>Sex</th>
<th>Number Examined</th>
<th>Number affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>49</td>
<td>9 (17.7)</td>
</tr>
<tr>
<td>Females</td>
<td>71</td>
<td>16 (22.5)</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>25 (20.8)</td>
</tr>
</tbody>
</table>

Numbers in brackets are percentages.

Table 2: Age distribution of asymptomatic bacteriuria in Okigwe

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number Examined</th>
<th>Number affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-20</td>
<td>21</td>
<td>4 (19)</td>
</tr>
<tr>
<td>21-25</td>
<td>19</td>
<td>5 (26.3)</td>
</tr>
<tr>
<td>26-30</td>
<td>21</td>
<td>7 (33.3)</td>
</tr>
<tr>
<td>31-35</td>
<td>22</td>
<td>4 (18.1)</td>
</tr>
<tr>
<td>36-40</td>
<td>19</td>
<td>3 (15.7)</td>
</tr>
<tr>
<td>41-45</td>
<td>18</td>
<td>2 (11.1)</td>
</tr>
</tbody>
</table>

Numbers in brackets are percentages.
Table 3: Prevalence of asymptomatic bacteriuria in Okigwe by Occupation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number Examined</th>
<th>Number Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>50</td>
<td>8(16)</td>
</tr>
<tr>
<td>Traders</td>
<td>40</td>
<td>13(32.5)</td>
</tr>
<tr>
<td>Civil Servants</td>
<td>30</td>
<td>4(13.3)</td>
</tr>
</tbody>
</table>

Numbers in brackets are percentages

Table 4: Percentage occurrence of bacterial isolates

<table>
<thead>
<tr>
<th>Organism</th>
<th>Percentage Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Escherichia coli</em></td>
<td>18.2</td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>6.7</td>
</tr>
<tr>
<td><em>Klebsiella</em> spp</td>
<td>5.0</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>12.5</td>
</tr>
<tr>
<td><em>Proteus</em> spp</td>
<td>5.0</td>
</tr>
</tbody>
</table>

...to 17.7% in men. This higher prevalence in females could be as a result of urethral contamination which is higher in females than males because of anatomical position of the female urinogenital tract (Ojo et al., 2007; Azubuike et al., 1994). Moreso the pressure which goes with coitus may permit the introduction of organisms from introitus into the urinary tract of females (Umeh et al., 2006; Valiquett, 2001).

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