Original Research Article

Prevalence of urinary tract infections in pregnant women attending antenatal consultations at the General Reference Hospital of Makiso in Kisangani, Democratic Republic of Congo

Abstract

Infections during pregnancy are a source of premature onset of labour, of ectopic pregnancy in women and of infections, especially of the eyes and lungs, in newborns. A third of women usually suffer from urinary tract infection before the age of 24. Bacteria are the cause of most urinary tract infections. Women are much more affected than men because their urethra is shorter and facilitates the entry of bacteria into the bladder. These infections rank 2nd (15%) among the contributing causes of maternal deaths worldwide. This descriptive-analytical study aims to determine the prevalence of urinary infection in pregnant women by the presence of white blood cells and epithelial cells in the urinary sediment. Of 215 pregnant women who came to the Makiso Reference General Hospital for Prenatal Consultation, Only 85 have agreed to give their urine for microscopic examination in the laboratory during the period from September 10 to December 10, 2021. This analysis shows that out of a total of 85 respondents, 56.5% of cases are positive compared to 43.5% of negative cases. High infection was observed in pregnant women from the Makiso commune (62.5%); the most affected age group was 32-41 years (37.5%); the age group 42 years and over had only one case (2%). 32.9% of infected pregnant women have no level of study; This study provides more information on urinary tract infection in pregnant women who came for Prenatal Consultation.

Keywords: Urinary tract infection, pregnant women, Prenatal consultation, Reference General Hospital, R.D.Congo

1. INTRODUCTION:

Urinary tract infections are common during pregnancy, but not always easy to identify. Indeed, about 10% of women contract a urinary tract infection during pregnancy, and the symptoms are not always the same as outside pregnancy [1] It can have harmful consequences for the mother and the fetus and can manifest in three forms: pregnant urinary colonization (also known as asymptomatic bacteriuria), pregnant acute cystitis and acute pyelonephritis (ANC). In pregnant women, any urinary tract infection is by definition at risk of complications [2]. It is estimated that 2-15% of pregnant women suffer from type of urinary tract infections with the presence of bacteria in the urine in the absence of symptoms. Without treatment, this type of infection can become complicated and reach the kidneys; followed by 1 to 4% of pregnant women would suffer from bladder infection (cystitis) and finally, 1 to 2% of pregnancies show a complication due to kidney infection (pyelonephritis). In 80-90% of cases, it would occur in the second or third quarter [3]. For this reason, every month, the doctor or midwife in charge of monitoring the pregnancy may ask the future mother to make urinary strips in order to detect a possible urinary tract infection (cystitis) [4]. In addition, transient diabetes (gestational diabetes) is sometimes observed during

pregnancy. This diabetes can promote the occurrence of a urinary tract infection. Women who frequently suffer from urinary tract infections outside pregnancy, as well as those who suffer from uncontrolled diabetes (whose urine may contain sugar, conducive to the multiplication of bacteria) or sickle cell disease have a higher risk of urinary tract infection during pregnancy [4] The appearance of urinary tract infections in women is favored by hormonal changes in pregnancy (especially the increase in progesterone levels) which decrease the tone of the urinary tract from the first trimester of pregnancy. They become "lazy" in short: the urine flow is reduced and the urine stagnates a little too long in the bladder, which weakens its defenses against microbes. On the other hand, when the uterus of the gestant becomes too large (from the second trimester of pregnancy) she has difficulty emptying her bladder completely, which further increases the risk of urinary tract infections [5]. The cytobacteriological examination of the urine (or ECBU) allows to determine if there is a urinary infection, and if so to identify the bacterium responsible and to assess the importance of inflammation. It aims to collect and analyze the first urination in the morning. It will determine the number of red blood cells and leukocytes, the presence of crystals and germs [6]. Urinary tract infections (pyelonephritis, cystitis and asymptomatic bacteriurias) are the most common complications in pregnant women, occurring in 2% to 7% of all pregnancies [7]. Studies in America and elsewhere show that up to 55% of women use medicinal plants during the gestational period [8].
Numerous studies also show that the main germs encountered during urinary tract infections are: Escherichia Coli, Klebsiella pneumoniae, Proteus mirabilis and enterococci [9,10]. However, the etiological and antibiotic susceptibility profiles of germs responsible for urinary tract infections are likely to vary from one region to another [11].
In Africa, the presence of bacteria in urine is found in 2.5 to 12% of pregnant women [12]. In Senegal, a study carried out in 2006 in 2009 on pathological pregnancies showed a frequency of 6.6% of urinary tract infection of which 81% was due to Escherichia coli [13]. A study conducted in Cameroon by on the bacteriological analysis of urinary infections at the Pasteur Center of Cameroon in 2008, also revealed that women had more urinary tract infections than men [14].
In the Democratic Republic of the Congo, a study conducted in 2008 found that 15% of pregnant women face complications during childbirth that could lead to death. To avoid this, gynaecologists make a series of recommendations. These include medical examinations and pregnancy monitoring [15]
There are few studies on this subject. In the province of Tshopo, a study conducted in the city of Kisangani, in the Kabondo area, showed that the mortality rate associated with urinary tract infections in children under the age of 12 is 8,5%, unlike Biyanga which has a mortality rate due to urinary tract infections at 11%. In general, infections rank first in the DRC with a prevalence of 6% after malaria, which is at 8%. Infections in general are at 31.1% [16].

2. METHOD AND MATERIALS

2.1. Study Site Description

The laboratory of the Makiso-Kisangani Reference General Hospital provided a framework for the analysis of our samples. This laboratory led by a medical biologist trained and equipped with equipment as recommended by the secondary level of the national primary health care policy.

2.2. Geographical Situation

The Makiso Reference General Hospital is located in the municipality of Makiso, in the city of Kisangani, in the Plateau Medical District, on Abbé MUNYORORO Avenue N° 245/15. It is limited to the East by the Kisangani 'CAMEKIS' Essential Medicines Supply Centre in acronym and the Kisangani Higher Institute of Commerce; to the West by the AL-WALEED Health Centre and the SIMISIMI military airport; To the North by the ZINIA block and to the South by the Kisangani University Clinics.

2.3. Study Population and Sample

The population of our study consists of all pregnant women who attended prenatal consultations at the Makiso General Reference Hospital during the period of our study. 85 urine samples were collected and subjected to microscopic examination of urinary sediments.

3.1. METHODOLOGY

This study is descriptive – analytical conducted at Makiso Reference General Hospital during the period September 10 to December 10, 2021.

Data collection technique

The variables used are: age, sex, address of the respondents.

A register, a ballpoint pen and an indelible pen to identify the vials containing the samples have in the list of equipment used.

3.2. MATERIALS

We used the following materials:

- Microscope;
- Sterile vials;
- Centrifuge;
- Conical-bottomed tubes;
- Object Blades;
- Cover-object slats;
- Stopwatch;
- Register and ballpoint pen for recording.

Modus operandi

Collect urine from ¾ sterile vial (24-hour urine);

Identify the sample to avoid confusion;

Then transfer the ¾ sample to the conical tube;

Place in the centrifuge by balancing the conical tubes;

Centrifuge at an average speed of 2500 rpm for 5 minutes;

Let the centrifuge stop on its own;

Open the device and remove the sample;

Pour the supernatant and mix the base;

Place a drop of mixed pellet on the object holder blade;

Cover with a slide and read (observe) under a low magnification microscope (10x or 40x);

Record the results.

Statistical analysis of data

After we collected our microscopically examined samples, we grouped them into different variables and expressed them as a percentage using the formula:

%= (F0 X 100)/Ft

Caption:

% = Percentage

F0 = Observed frequency

Ft = Total frequency

4. RESULTS

Table 1. Distribution of respondents by municipality of origin

Adress	**Frequency**	**%**
Mangobo	22	25.9
Makiso	50	58.8
Lubunga	2	2.4
Tshopo	8	9 .4
Kabondo	2	2.4
Kisangani	1	1.1
Total	**85**	**100**

We note from this table that 50 cases or 58.8% of the surveyed live in the commune Makiso, 22 cases or 25.9% live in the commune Mangobo, 8 cases or 9.4% the commune Tshopo, 2 cases or 2.4% the commune Kabondo and 1 case or 1.1% the commune Kisangani.

Table 2. Age distribution of respondents

Age	**Frequency**	**%**

12 – 21 ans	20	23.5
22 – 31 ans	34	40
32 – 41 ans	30	35.3
40 et plus	1	1.2
Total	**85**	**100**

The table shows that the majority of pregnant women were in the age group 22 – 31 years with 34 cases or 40%; followed by 30 cases or 35.3% of the age groups between 32 – 41 years; followed by 20 cases or 23.5% of 12 – 21 years and finally, Respondents aged 42 and over were the least frequent with a single pregnant woman, with a score of 1.2%.

Table 3. Overall positive result

Résults	**Frequency**	**%**
Positif	48	56.5
Négatif	37	43.5
Total	**85**	**100**

Overall, out of 85 samples examined, 48 samples were positive, with a score of 56.5% versus 37 negative cases, or 43.5% negative.

Table 4. Distribution of positive outcomes by age of respondents

Age	**Frequency**	**%**
12 – 21ans	13	27.1
22 – 31ans	16	33.3
32 – 41ans	18	37.5
42 et plus	1	2.1
Total	**48**	**100**

From this table, the high positivity in the gestant of cutting-edge age ranges from 22 to 31 years or 33.3%; followed by 32 to 41 years or 37.5% and that of 12 to 21 years or 27.1%. The age group of 42 years and over closes the sleeve with 1 single case or 2.1%

Table 5. Distribution of positive results by municipality of origin

Adress	**Frequency**	**%**
Mangobo	8	16.7
Makiso	30	62.5
Lubunga	2	4.2
Tshopo	5	10.4
Kisangani	1	2.0
Kabondo	2	4.2
Total	**48**	**100**

The analysis of this table shows that the commune Makiso beats record with 30 positive cases or 62.5%; then follows the commune of Mangobo with 8 cases or 16.7% and the Tshopo with 5 cases or 10.4%. He noticed again that the commune of Kabondo and that of Lubunga each have 2 cases or 4.2% and the commune of Kisangani is found at the bottom of the scale with the only case being against 2%

Table 6. Distribution of respondents by municipality by level of study Common

Commune	Mangobo	Makiso	Lubunga	Tshopo	Kisangani	Kabondo	Total	%
Study Level								
Without level	12	10	2	2	1	1	28	32.9
Primary	8	15	0	2	0	1	26	30.6
Secondary	2	20	0	4	0	0	26	30.6
Academic	0	5	0	0	0	0	5	5.9
Total	**22**	**50**	**2**	**8**	**1**	**2**	**85**	**100**

From this table, a total of 28 cases (32.9%) of those surveyed have no level of study and were from the Mangobo commune. Gestants with a primary and secondary study are tied with 26 cases (30.6%) all from Makiso. And finally, the 5 cases (5.9%) were found for the university level and come from the commune Makiso.

5. DISCUSSIONS

5.1. Frequency

Out of a total of 85 pregnant women, we recorded 48 cases of urinary tract infection, for a prevalence of 56.5%. Our rate is much higher than that of Aminta TOURE in a study conducted in Mali, which found 48 positive cases out of 492 pregnant women, a prevalence of 9.8% [13]; and that of Togo A. and Diassana HK. which scored 8.8% and 8.54%. This difference could be explained by the criteria for inclusion in the different series and that the number of our samples was lower than the others.

In the Democratic Republic of the Congo, there are few studies on this subject. We can however point to the work of Biayi et al, in 2015 in Mbuji-Mayi, where they showed that during pregnancy, the prevalence of urinary tract infection was 66.36% with a predominance of E. coli (53.5%) and staphylococcus (30.98%) alone or in association with the candida albicans [16].

5.2. The age of the respondents:

The 85 pregnant women who came to prenatal consultations had ages ranging from 12 to 43 years, with an average age of 25 years. The most represented age group was 22 – 31 years (40%); followed by age group 32 – 41 years (35.3%); and 12 – 21 years (23.5%) and 42 years and over (1.2%).

5.3. Global positivity

Analysis of our samples revealed that 56.5% of pregnant women had a urinary tract infection. This result is higher than the study conducted by MEYHER, which indicated that the frequency in pregnant women was 2.3 to 17.5%; especially in the pyelonephritis primipares which was 20 to 40% with possibility of abortion. The argument for this result may be that our study was limited to a qualitative examination (urinary sediment examination) without urination culture.

5.4. Positivity by age group:

Biological analysis of our samples from this study showed that 48 cases or 56.5% gave positive results of urinary tract infections in gestants. These results are superior to the study conducted in Burkina Faso by Abdoulaye NIKIEMA on urinary tract infections in pregnant women whose prevalence was 18% in the age group of 17 – 42 years with an average age

of 29 years. In addition, in the studies of Dietrich M et al.; Altou et al. The age groups were 15-45 years, 18-47 years with an average of 26 years and 30 years respectively [18]. In his study, Issa DIARRA showed that the most dominant age group was 20-34 [19]. However, in our study, it was found that the frequency of urinary tract infection is higher in young pregnant women with 40% in the age group 22-31 years compared to 1.2% in the over 40 years. This difference is not statistically significant. This proves that urinary tract infection occurs at any age of the pregnant woman; especially in women of sexual activity age.

5.5. Source:

In relation to the origin of our surveyed, the commune Makiso is majority by the urinary infection of pregnant women with a score of 62.5% followed by Mangobo (16.7%) and that of Tshopo with 10.4%. These results could be explained by the fact that there is a promiscuity of the inhabitants in these communes where there are commercial activities of all kinds, for some women, an opportunity, due to a lack of financial means to give it to prostitution during pregnancy to meet social needs, which is a factor favouring in the genesis of urinary tract infection(STI).

5.6. The level of study:

Among the respondents examined, it appears that 32.9% of pregnant women have no level of study and came from the commune Mangobo. It should also be noted that the commune Makiso was full of pregnant women with primary and secondary education who are tied with 30.6% each. In addition, women with a university level of study were infected in the order of 5.9%. This proves the simple difference in the degree of instruction that this category of pregnant women have thus allowing to respect the notion of both bodily and sexual hygiene.

6. CONCLUSION AND RECOMMENDATIONS

At the end of our study, we can say that urinary tract infection is common during pregnancy. Early diagnosis and proper treatment of the infection will help to avoid complications related to pyelonephritis: threats of premature delivery, premature delivery, death in utero. The clinician must be able to recognize the different entities of urogenital tract infections. Despite an adequately identified clinical syndrome, empirical treatments may become increasingly ineffective due to increasing bacterial resistance.

CONSENT AND ETHICAL APPROVAL

Adherence to the study depended on informed consent and confidentiality of the study. Prior authorization has been obtained from local health and administrative authorities.

From the above, we suggest the following:

- Health authorities: that all laboratories (public and private) must be equipped with competent technicians and adequate equipment; ensure that all laboratories are regularly checked by those responsible for the health inspection department.
- To medical staff: sensitize pregnant women with hygienic-dietary advice during prenatal consultations (CPN) as by illustration: empty the bladder after sexual intercourse, drink plenty of water in the morning, take foods containing a lot of fiber, eat fruit regularly; ensure proper monitoring of fat during urinary tract infection.

- For pregnant women: regular NHC, follow the advice of health care providers and avoid self-medication.
- To the future researcher: continue and further research on other parameters related to this study.

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