

Research Article

Incidence of Urinary Tract Infections in Anemic Pregnant Females

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ABSTRACT:

Background: A decreased state of immunity is referred to pregnancy and it also causes the variation of psychological nature because of urinary tract infection (UTI), which are excessively present in the state of an anemic pregnancy. Pregnancy bacteriuria present in the global setting ranges in the limits of 4 – 23 percent in numerous research conducted to explore the subject issue. There is an association of the maternal anemia which is associated with the pyelonephritis and asymptomatic bacteriuria.

Materials and Method: Our cross-sectional research is conducted for the determination of the association between the anemia during pregnancy and UTI at the tertiary stage of the healthcare. We included a total of 100 women in pregnancy and divided the total sample in to two groups as controls and cases. In the group of cases the level of Hb was observed as (<10 gm%); whereas, in the group of controls Hb was considered as (>= 10gm%). Estimation of the hemoglobin was completed by the method of Sahil and accordingly anemia classification was completed. Mid-Stream clean sample of urine was used through the use of (>10⁵) colony that formed unit/ml and significant bacteriuria level.

Result: An overall prevalence was noticed twenty-six percent and high UTI prevalence was about forty percent in the anemia pregnant women with the level of Hb as (<10 gm%) in comparison to twelve percent of the non-anemic pregnant women with the level of Hb as (10 gm%). Significant low rate of Hb was observed in the cases of UTI case group as (8.2%). A high prevalence was present in the age group of 21 – 25 years and during second trimester with a proportion of (75%). Multiparty was linked with the UTI during pregnancy and frequent isolated pathogen of E. coli were observed as (61%).

Conclusion: It is concluded in the research that there is an association between anemia and UTI because of numerous causes during pregnancy. A high risk was involved about risk in the complications of pregnancy associated to UTI and in terms of parity about gestational age and age.

Keywords: Bacteriuria, Anemia, Pyelonephritis and Hemoglobin (Hb).

INTRODUCTION

UTI is caused due to the microorganism's growth in urinary tract, which is also mankind's single commonest bacterial infection in the course pregnancy, which may involve bladder or lower urinary tract[1]. It is reported in the twenty percent of the pregnant cases and considered as the repeated cause of the patient's admission in the obstetrical wards. It can also be divided in to lower and upper urinary tract[2], urethra and bladder, pelvis, kidney and ureter. The major

cause is actually the increased rate of an infection.

UTI has 3 major clinical manifestations during pregnancy: acute cystitis, asymptomatic bacteriuria and acute pyelonephritis. UTI can be defined as the presence of the a minimum of 100,000 organisms/mm of urine in the patient of asymptomatic bacteriuria or it is even above 100 organisms/mL of urine having accompanying pyuria as (> 5 White Blood Cells/mL) in

symptomatic patient. Specifically[3], in the patients of asymptomatic UTI diagnosis need to be supported through a culture that is positive about the auto pathogen[4]. An asymptomatic bacteriuria which is untreated becomes a factor of risk for the (40%) acute cystitis and (25-30%) pyelonephritis in case of pregnancy and also account for the seventy percent of the symptomatic UTI cases among pregnant women which are unscreened. Both symptomatic & asymptomatic bacteriuria is reported respectively in the 17.9& 13.0 percent pregnant cases[5].

UTI risk is increased during the course of pregnancy, around pregnancy's sixth week because of the psychological changes the dilation of the ureters starts, which is also referred to "hydro-nephrosis" of pregnancy", this process is at its peak in the period of 22 – 26 weeks and continues till the event of delivery[6]. It regains normal position in the time span of several weeks in majority of the women. Levels of estrogen and progesterone are raised in the course of pregnancy which will cause decreased tone of the bladder and ureteral. Renal pelvis dilatation including dilation and elongation of ureters above pelvic-brim happens because of the ureters compression through gravid uterus[7]. An enhanced volume of the plasma during the course of pregnancy decreases concentration of the urine and the volume of the bladder is increased. In the event of these factors combination there is an evidence of the uretero-vesical reflux and urinary stasis. Additionally, aminoaciduria and glycosuria provide outstanding cultural medium in the urinary stasis area for the bacteria and an apparent immunity decrease in the state of pregnancy also enhances the commensal and non-commensal growth of microorganisms[8].

Another risk factor is the female gender due to the shortness of the urethra, its vagina proximity and inability and anus women as the bladder is completely empty. An increased incidence has been observed in the deprived groups of the society other risk factors include the act of sex and use of contraceptive techniques[9]. An anatomical association of the female's vagina and urethra

causes trauma in the act of intercourse and the massage of bacteria up to the bladder in the course of pregnancy and birth of the newborn. The complexities and issues of stones and urinary tract, sickle cell traits, diabetes mellitus, UTI history and immunosuppression including low social or economic state increases the risk factor[10].

Bacteriuria global presence in the course of pregnancy is observed in the range of 4 – 23 percent during numerous research studies. There is an association of the maternal anemia with pyelonephritis and asymptomatic bacteriuria. During pregnancy UTI is a significant contributor of the peri-natal and maternal morbidity. Abortion, maternal anemia, low birth weight, preterm labor, hypertension and chronic pyelonephritis have an association with the UTI in the course of pregnancy. The pre-dominance is given to the E. coli because of UTI in the course of pregnancy; however, recent investigations have observed a changed infection pattern[11].

In a Nigerian research there is an increased involvement of Staphylococcus aureus, Klebsiella Spp, Pseudomonas spp and Proteus spp in UTI in the course of pregnancy. Research attempts have also reflected the bacteriuria treatment in the course of pregnancy because of the reduced incidence about these complexities and the decreased extended effects of the asymptomatic bacteriuria[12].

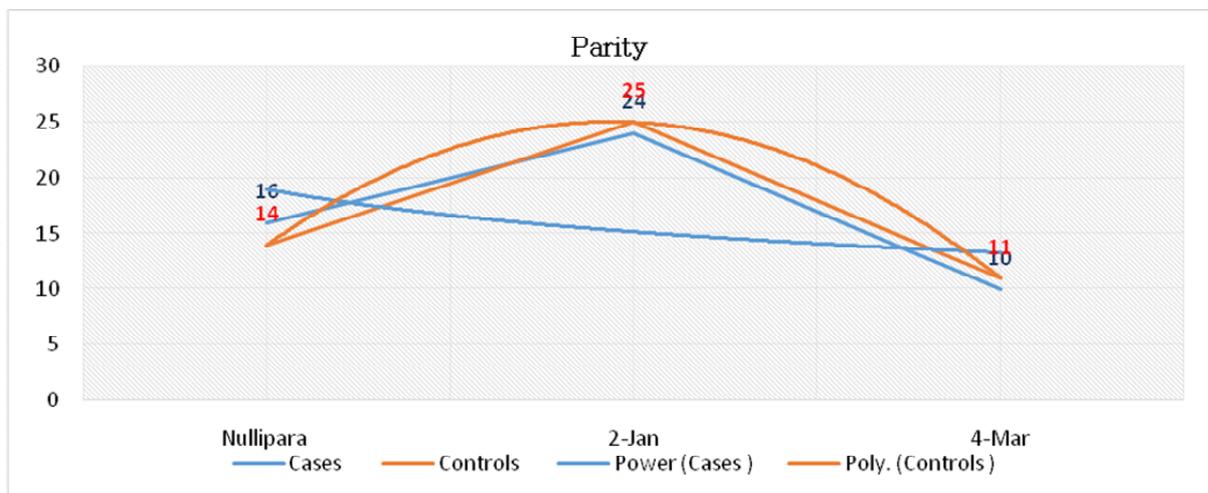
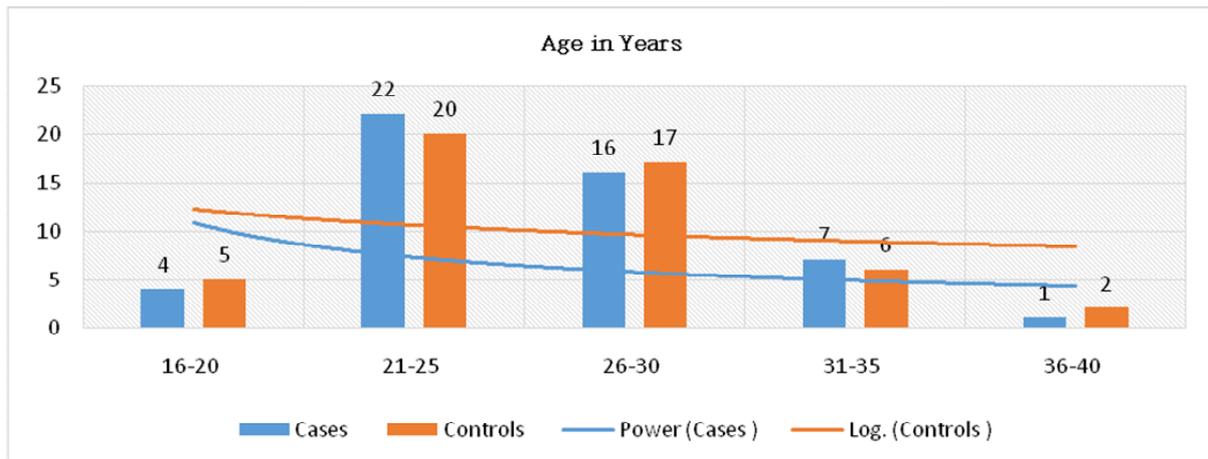
Data collection: A random selection of the antenatal women was enrolled in the research after being informed verbally. Social and demographic information including age, gestational age and parity were gathered through a standard questionnaire, all the information secrecy was maintained throughout the research. Sahil method was used for the estimation of the hemoglobin. Midstream urine was taken in the early morning from pregnant women, this clean urine was collected in an open-mouth container which was sterile and capped. Blood agar was used for the urine culture and MacConkey agar plate was used for the standard loop method. An incubation was

performed for one night at the temperature of 37°C for a period of twenty-five hours, yielding of the colony count for growth of the bacteria was less than 10⁵ /ml was measured significant in symptomatic and asymptomatic pregnant ladies. An examination of the centrifuged urine deposit

was carried by a high magnification microscope for the red blood cells, pus cells, casts, epithelial cells, crystals and yeast-like cells. Pus cells (5/HPF) were considered significantly involved in the factor of infection.

Table-1: Frequency distribution of study groups by age, parity and gestational age

Age (Years)	Cases	Controls
16-20	4	5
21-25	22	20
26-30	16	17
31-35	7	6
36-40	1	2
Parity	Cases	Controls
Nullipara	16	14
2-Jan	24	25
4-Mar	10	11
Gestational Age (trimester of pregnancy)		
1st	5	6
2nd	15	16
3rd	30	28
Total	50	50



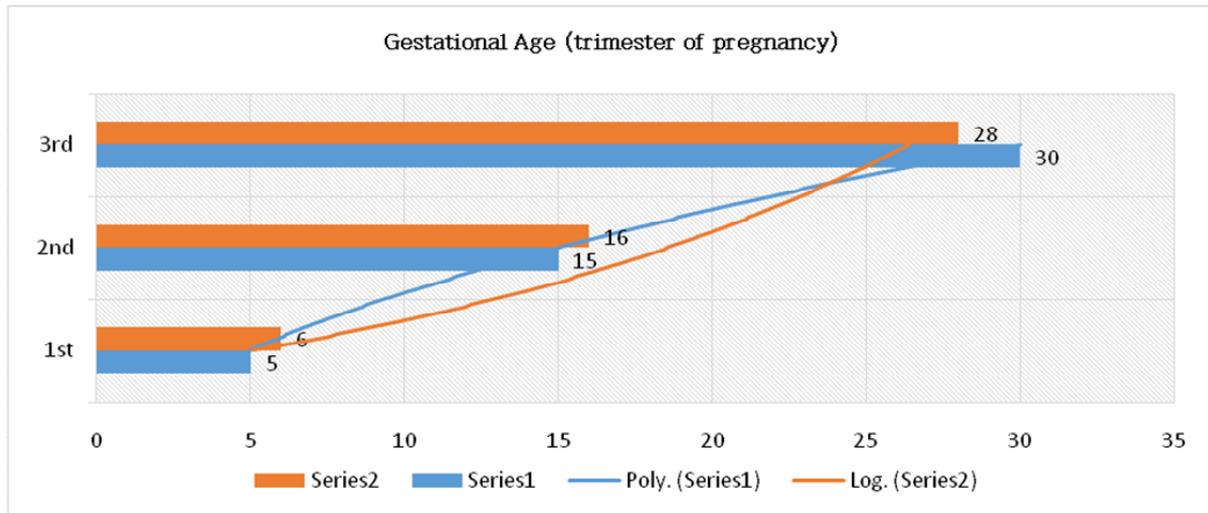


Table-2: Case control difference in mean blood Hb concentration

Blood Hb concentration (gm/dl)	Cases (50)	Controls (50)
Range	6.4-9.9	10-12
Mean	8.2	11.2

Table-3: Prevalence of UTI (urine culture positivity) among two study groups

Positivity	Cases (n=50) Hb<10gm%	Controls (n=50) Hb>=10 gm%
No positive	20	6
% positive	40	12

Table-4: Case-control difference in prevalence of UTI in relation to the age, parity and Gestational age

Age Group	Cases			Controls		
	No examined	No positive	% positive	No examined	No positive	% positive
16 - 20	4	1	5%	5	0	0%
21 - 25	22	10	50%	20	3	50%
26 - 30	16	5	25%	17	2	33.30%
31-35	7	3	5%	6	1	16.66%
36-40	1	1	5%	2	0	0%
Parity						
Nullipara	16	4	20%	14	1	16.60%
2-Jan	24	8	40%	25	2	33.30%
4-Mar	10	8	40%	11	3	50%
Gestational age						
1st	5	2	10%	6	1	16.60%
2nd	15	3	15%	16	1	16.60%
3rd	30	15	75%	28	4	66.60%

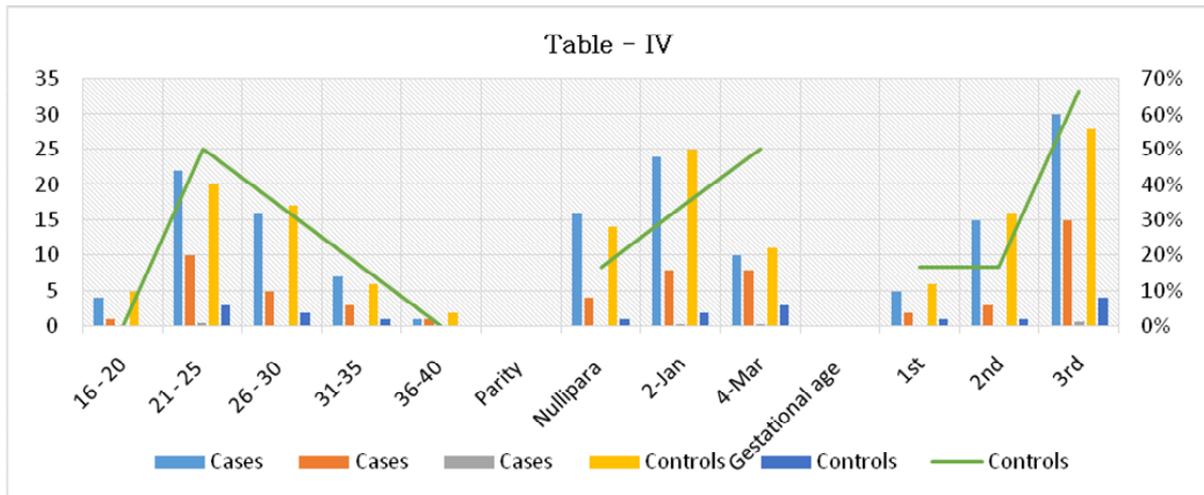
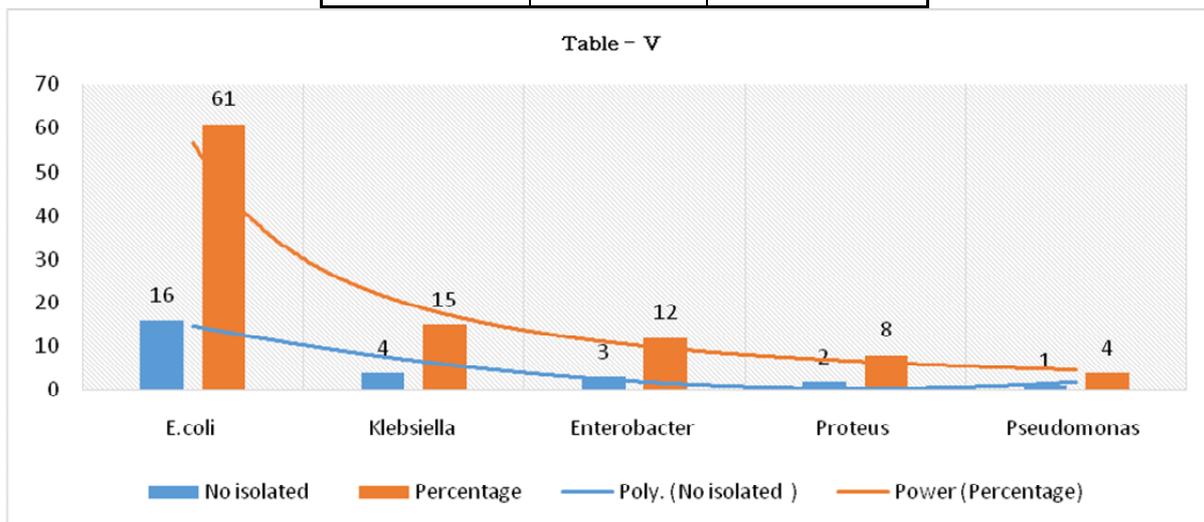


Table-5: Percentage of isolation of various significant pathogen in urine of pregnant woman

Pathogen	No isolated	Percentage
E.coli	16	61
Klebsiella	4	15
Enterobacter	3	12
Proteus	2	8
Pseudomonas	1	4



Data analysis: Each parameter was extracted for the computation of the data and data entry and analysis was made through SPSS-19 with significant (p-value =0.05).

DISCUSSION

In the age group of 20 – 25 years the highest incidence is observed and after that the highest incidence was observed in the age group of the 26 – 30 years. In the previous research studies same age groups were involved in the higher

incidences[13]. It could have been because of the reason that in this age group majority of the women already had more than one children and multiparity becomes a risk in the course of pregnancy because of the acquisition of the bacteriuria[14]. Other involved factors of risk are contraceptive methods and act of sex causing risk factors in the women in these age groups[15]. Our research report is matching with the outcomes of the research conducted by Onuh and Leigh, in terms of age groups and UTI incidence[16]. According to Onuh, in the same groups of age

there is high chance of the development of the UTI in the course of pregnancy. Present research states the UTI frequency that it is increased in the 3rd trimester in comparison to the 1st and 2nd trimester of the pregnancy[17]. It is also same as in the research of Leigh that an increased frequency of UTI in the 3rd trimester in comparison to the 1st and 2nd trimester in the course of pregnancy[18].

CONCLUSION

It is concluded in the research that there is an association between anemia and UTI because of numerous causes during pregnancy. A high risk was involved about risk in the complications of pregnancy associated to UTI and in terms of parity about gestational age and age. In all the pregnant cases urine culture screening is important and the treatment of the positive antibiotic culture including retest for the betterment of the curing process. The objective of the treatment and diagnosis of the UTI in the pregnant cases is for the prevention of the complexities and it also benefits the fetus and mother in the course of pregnancy. An awareness in terms of nutritional education is also suggested to prevent pregnancy anemia problems, it includes the guidance and counseling about the intake of iron and balanced nutritional diet. We also recommended the justified distribution of the related healthcare services according to the need of the sample population and in general practice during pregnancy in women. Iron supplementation and family planning may also add in this regard.

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