



OUTCOME OF ASYMPTOMATIC BACTERIURIA IN PREGNANT WOMEN IN LATE PREGNANCY : A PROSPECTIVE STUDY

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KEYWORDS :

INTRODUCTION

- Urinary tract infections (UTIs) are the most common bacterial infections during pregnancy, The urinary tract is the second most common site of microbial infections, especially in females, after the respiratory tract
- Asymptomatic bacteriuria is diagnosed when a bacterial count of the same species exceeds 10^5 /ml in midstream clean-catch urine on two separate occasions
- Delzell JE et al. defined asymptomatic bacteriuria as the presence of actively multiplying bacteria at concentrations of $\geq 100,000$ colony-forming units per ml of urine, without any symptoms of a urinary tract infection.
- It is important to treat asymptomatic bacteriuria because 40% of cases can develop into symptomatic UTIs.
- The most common bacteria involved is E. coli, followed by Proteus, Klebsiella, coagulase-negative staphylococci, and Pseudomonas.
- Physiological changes during pregnancy increase the risk of pyelonephritis, which can lead to complications such as preterm delivery, low birth weight, intrauterine growth restriction (IUGR), anemia, thrombocytopenia, and abnormal liver and kidney function tests.
- About 90% of pregnant women experience urethral dilation starting around the 6th week, peaking at 22-24 weeks, and continuing until delivery.
- Increased bladder volume and decreased bladder and urethral tone lead to urinary stasis and ureterovesical reflux.
- These factors contribute to 70% of asymptomatic UTIs in unscreened pregnant women.
- Virulence factors such as bacterial adhesions and stasis caused by the gravid uterus play a role in UTI development.
- Symptoms of urinary tract infection include lower abdominal pain, burning during urination, fever, dysuria, frequent urination, urgency, suprapubic discomfort, foul-smelling urine, painful urination, urge incontinence, and nocturia.
- Pregnant women may experience a reduction in immunity, which encourages the growth of both commensal and non-commensal microorganisms.
- The female urethra is relatively short and located close to the vagina, which is colonized by organisms from the gastrointestinal tract.
- Bacteria typically originate from the large bowel and colonize the urinary tract through the perineum.
- Relapse and reinfection are common during pregnancy.
- About 15% of pregnant women experience relapse or reinfection.
- Reinfection happens when a different bacterial strain causes a new infection after the first one has been eradicated.
- Screening for asymptomatic bacteriuria in pregnant

women is cost-effective compared to treating UTIs and pyelonephritis without screening.

- Screening techniques for detecting bacteriuria include urine analysis, leukocyte esterase activity, nitrite tests, and urine cultures.
- A midstream urine culture remains the most reliable diagnostic test for bacteriuria.

Objectives Of The Study

1. To determine the maternal and fetal outcome in patients with asymptomatic bacteriuria in obstetric patients with period of gestation more than 28 weeks.

Methodology

- **Source Of Data:** Antenatal Cases at Kanachur Institute of Medical Sciences, Deralakatte, Mangalore
- **Study Period:** August 2022 to July 2024.
- **Place Of Study:** Patients presenting in OBG OPD , LABOUR ROOM & CASUALTY of Kanachur Institute of Medical Sciences Deralakatte, Mangalore
- **Sample size:** $n = \frac{Z_{\alpha}^2 PQ}{d^2}$

Considering P as 12. 2 % with 95% CI and margin of error (5%)
The sample size (n) calculated is 166

Inclusion Criteria

- Age ranging between 20-40 years,
- Any parity
- Gestational age > 28 weeks
- Singleton pregnancy,
- No history of rupture of membranes
- No history of preterm labor in previous pregnancies

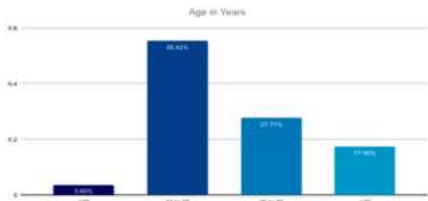
Exclusion Criteria

- Fever
- Symptoms of urinary tract infections such as hesitancy, dysuria, urgency, frequent voiding, incomplete voiding and incontinence, hypertension, diabetes.
- History of antibiotic therapy in previous 2 weeks
- Known congenital anomalies of urinary tract
- Study methodology
- After taking informed consent, and after obtaining patient's personal and demographic details .
- Patient will be instructed to collect mid stream clean catch urine sample (patient will be advised to clean the urethral area prior to voiding and will be asked to discard the initial urine, and mid stream to be collected) in a sterile bottle which will be sent to central lab in kanachur institute of medical science, Natekal, Mangalore.
- Microscopic examination for pus cells will be carried out.
- On examination directly under the microscope, pus cells per high power field should be noted.

- Urine culture will also be done with the same urine sample and semi quantitative methods to be used to check for culture.
- A count of 10 or more per high power field and positive urine culture will be taken and an indication of urinary tract infection.

RESULTS

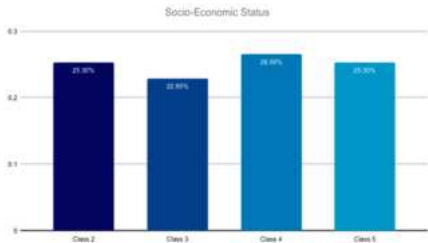
1. AGE IN YEARS		
AGE IN YEARS	CASE NO	PERCENT
less than 20 years	6	3.6
21-25 years	92	55.42
26-30 years	46	27.71
more than 30 years	29	17.46



- 6 (3.6%) of the pregnant females were less than 20 years , 92(55.24%) of the pregnant females were in the age group 21-25 years and 46 (27.71%) of the pregnant females were in the age group 26-30 years , 29(17.46) of the pregnant females were more than 30 years of age .

2. Socio-economic Status

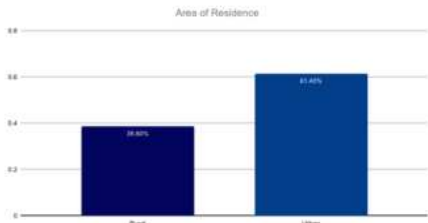
SES	CASE NO	PERCENT
CLASS 2	42	25.30%
CLASS 3	38	22.90%
CLASS 4	44	26.50%
CLASS 5	43	25.30%



- 42(25.30%)of the pregnant females belonged to Kuppuswamy class 2 , 38(22.90%)of the pregnant females belonged to Kuppuswamy class 3 , 44(26.50%)of the pregnant females belonged to Kuppuswamy class 4 , and 42(25.30%)of the pregnant females belonged to Kuppuswamy class 5

3. Area Of Residence

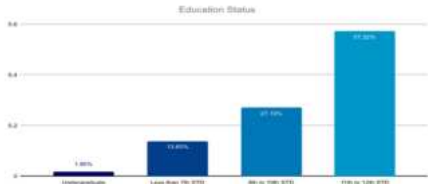
Area of residence	N	%
RURAL	64	38.60%
URBAN	102	61.40%



- 64(38.60%) were from rural areas and 102(61.40%) were from urban areas.

4. Educational Status

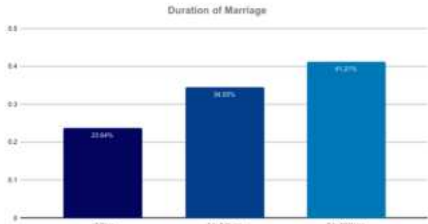
EDUCATIONAL STATUS	CASE NO	PERCENT
LESS THAN 7 WEEKS	23	13.8%
8TH TO 10TH STD	45	27.10%
11 TH TO 12 TH	95	57.22%
UNDERGRADUATE	3	1.80%
TOTAL	166	



- 23 (13.8) of the cases were less than 7th class , 45 (27.10%) of the cases were 8th to 10th class 95(57.22%) of the cases were 10 th to 12th , 23 (13.94%) of the cases was teacher and 3 (1.08%) of the cases were having undergraduate degree .

5. Duration Of Marriage

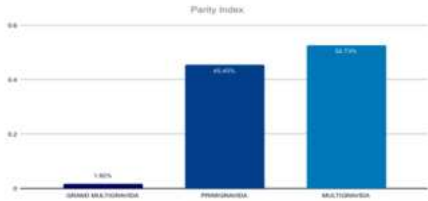
DURATION OF MARRIAGE	CASE NO	PERCENT
less than 1 year	39	23.64%
1-5 years	58	34.55%
5-10 years	68	41.21%



- 39(23.64%) were married for less than 1 year , 58(34.55%) were 1-5 years and 68(41.21%) were 5-10 years .

6. Parity Index

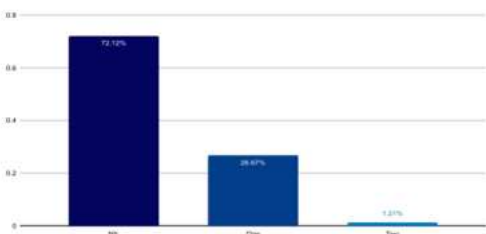
PARITY INDEX	CASE NO	PERCENT
PRIMIGRAVIDA	75	45.45%
MULTIGRAVIDA	88	52.73%
GRAND MULTIGRAVIDA	3	1.82%



- 75 (45.45%) of the cases was primigravida , 87 (52.73%) of the cases was multigravida and 3 (1.82%) of the cases was grand multigravida .

7. Past History Of Abortion

PAST HISTORY OF ABORTION	CASE NO	PERCENT
NIL	120	72.12%
ONE	44	26.67%
TWO	2	1.21%



- 119 (72.12%) of the cases was nil, 44 (26.67%) of the cases was one and 2 (1.21%) of the cases was two

8. Antenatal Events : Maternal Co Morbidities

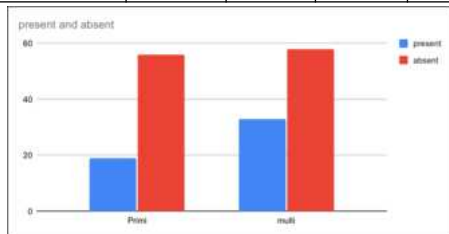
ANTENATAL EVENTS : MATERNAL CO-MORBIDITIES	N	%
ANEMIA	8	4.8%
PRE ECLAMPSIA	11	6.62%
HYPOTHYROID	1	0.60%
HYPERTHYROID	28	16.86%
NONE	118	71.08%



- 11 (6.62%) pre eclampsia , eight(4.80%) were having anaemia, 1 (0.60%) hypothyroid , 28(16.86%) hyperthyroid and 118 (71.08%)none .

9. H/o Uti In First And Second Trimsters

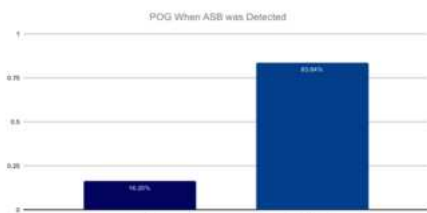
H/O UTI IN FIRST AND SECOND TRIMSTERS	PRESENT	ABSENT	PERCENT	PERCENT
PRIMI	19	56	11.40%	33.73%
MULTI	33	58	19.87%	34.93%



- In the first trimester, 11.40% of primiparous women experienced a UTI, whereas 19.87% of multiparous women reported the same. This suggests a higher incidence of UTIs among women who have had previous pregnancies. In the second trimester, the percentage of primiparous women with UTIs remains consistent at 11.40%, while the percentage of multiparous women with UTIs continues at 19.87%.

10. Pog When Asb Was Detected

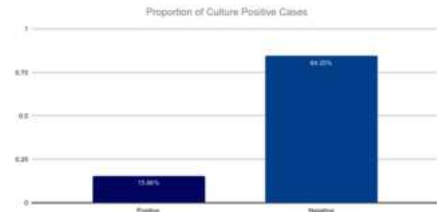
POG WHEN ASB WAS DETECTED	CASE NO	PERCENT
28-34 WEEKS	138	83.64%
MORE THAN 37 WEEKS	27	16.2%



- 7 (4.24%) of the cases was less than 28 weeks , 138 (83.64%) of the cases was 28-34 weeks and 20 (12.2%) of the cases was more than 37 weeks .

11. Proportion Of Culture Positive Cases

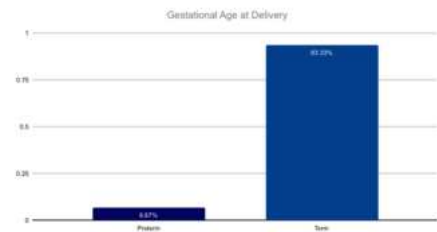
Culture	N	%
positive	26	15.66%
negative	140	84.33%



- All 15.66% culture positive cases had e coli growth after 48h , all showed sensitivity to Nitrofurantoin acute pyelonephritis in one culture positive patient was seen

12. Gestational Age At Delivery

GESTATIONAL AGE AT DELIVERY	CASE NO	PERCENT
PRETERM	11	6.67%
TERM	154	93.33%
TOTAL	166	100.00%



- At birth 11 (6.67%)preterm deliveries 154 (93.33%) term deliveries .

13. Mode Of Delivery

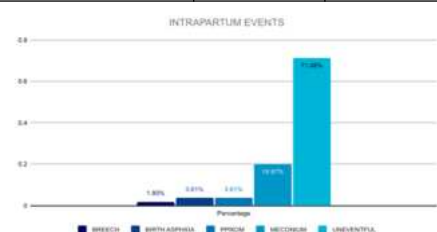
MODE OF DELIVERY	CASE NO	PERCENT
LSCS	73	43.97%
vaginal	93	56.02%



- Mode of delivery in 73(43.97%) of the cases were LSCS 93 (56.02%) of the cases were vaginal . 73 LSCS(elective +emergency), 20 (elective +emergency) were I/v o previous LSCS ; 26 (emergency) I/v/o non reassuring CTG; 7 for meconium stained liquor

14. Intrapartum Events

INTRAPARTUM EVENTS	CASE NO	PERCENT
BIRTH ASPHYXIA	6	3.61%
BREECH	3	1.80%
MECONIUM	33	19.87%
PPROM	6	3.61%
UNEVENTFUL	118	71.08%

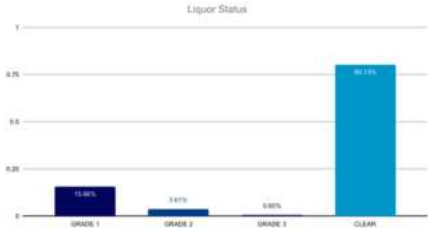


- birth asphyxia 6(3.61%) of the cases was birth asphyxia ,

breech (3(1.80 %) of the cases was breech ,meconium (33(19.87%) of the cases was meconium , pprom (6 (3.61%) of the cases was pprom and uneventful (118 (71.08%) of the cases was uneventful

15. Liquor Status

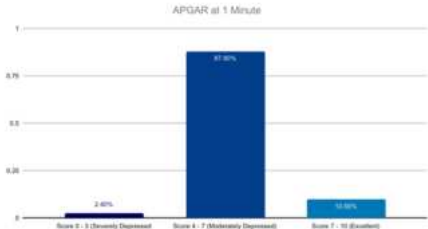
LIQUOR STATUS		CASE NO	PERCENT
Meconium stained(33)	GRADE 1	26	15.66%
	GRADE 2	6	3.61%
	GRADE 3	1	0.60%
clear liquor	133	80.12%	



- 15.66% had Grade 1 meconium staining, indicating a moderate presence of meconium in the amniotic fluid. Grade 2 meconium staining was observed in 3.61% of the cases, while Grade 3 meconium staining was noted in 0.60% of the cases, reflecting more severe staining. The majority of the cases, 80.12%, had clear liquor .

16. Apgar At 1 Minute

APGAR AT 1 MINUTE	CASE NO	PERCENT
APGAR SCORE 0- 3 (SEVERELY DEPRESSED)	4	2.4
APGAR SCORE 4-7 (MODERATELY DEPRESSED)	145	87.9
APGAR SCORE 7-10 (EXCELLENT)	17	10



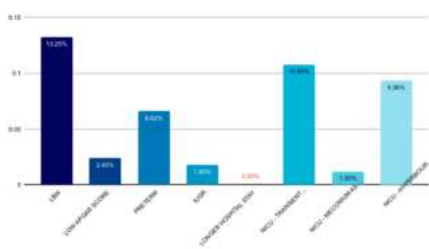
- 4 (2.42%) of the cases was APGAR score at 1 minute between 0- 3 (severely depressed) 145 (87.88%) of the cases was APGAR score at 1 minute between 4-7 at 1 minute between (moderately depressed) and 17 (10%) of the cases was APGAR score 7-10 (excellent) .

17. Neonatal Outcome

neonatal outcome	N	%
LBW	22	13.25%
LOW APGAR SCORE	4	2.40%
preterm (34 to 37 weeks at the time of delivery)	11	6.62%
IUGR	3	1.80%
LONGER HISPITAL STAY	0	
NICU ADMISSIONS	18 for Transiet tachypnea of newborn	10.8%,
	2 for MAS	1.20%,
	16 for Hyperbilirubinemia	9.36%

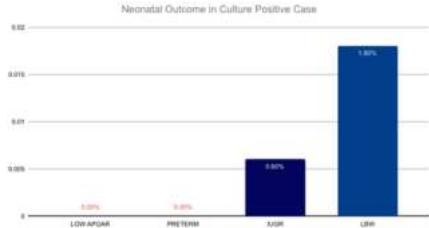
- 3 (1.80%) of the cases were LBW , 22 (13.25%) of the cases were LBW , 11 (6.62%) of the cases were preterm (34 to 37 weeks at the time of delivery) 24 (14.55%) of the cases was NICU admission ,18 for ttpn;2 for mas;16 for

hyperbilirubenemia .



18. Neonatal Outcome In Culture Positive Case

NEONATAL OUTCOME IN CULTURE POSITIVE CASE	N	%
PRETERM	0	0.00%
LBW	3	1.80%
LOW APGAR	0	0.00%
IUGR	1	0.60%



- 3 (1.80%) cases were low birth weight, IUGR we had one case 0.60%

19. Maternal outcome

MATERNAL OUTCOME	N	%
POST NATAL PYREXIA	9	5.42%
POST NATAL DEATH	0	
PURPERIAL SEPSIS	0	
LONGER HOSPITAL STAY	2	1.20%



DISCUSSION

- A prospective study was conducted from August 2022 to July 2024 at Kanachur Institute of Medical Sciences, involving 165 antenatal cases. The study aimed to evaluate various maternal and fetal outcomes, with a focus on urinary tract infections (UTIs) and their implications.
- The study population comprised a diverse range of pregnant women in terms of age and socioeconomic status. Among the participants, 6 women (3.6%) were under 20 years old, 92 women (55.24%) were in the 21-25 age group, 46 women (27.71%) were between 26-30 years old, and 29 women (17.46%) were over 30 years. This distribution highlights a predominance of younger women in their early to mid- twenties.
- Regarding gravidity, 75 cases (45.45%) were primigravida, 87 cases (52.73%) were multigravida, and 3 cases (1.82%) were grand multigravida. This indicates a majority of the study population were either first-time or experienced mothers.
- The Kuppuswamy socioeconomic class distribution showed that 42 women (25.30%) belonged to class 2, 38

- women (22.90%) to class 3, 44 women (26.50%) to class 4, and 42 women (25.30%) to class 1. This distribution provides insights into the economic backgrounds of the participants, with a broad representation across different socioeconomic classes.
- In terms of medical conditions, 11 women (6.62%) had preeclampsia, 1 woman (0.60%) had hypothyroidism, and 28 women (16.86%) had hyperthyroidism, And 16 women (9.6%) had anaemia with the remaining 120 women (72.2%) having no such conditions. This data highlights a relatively low prevalence of preeclampsia and hypothyroidism but a notable occurrence of hyperthyroidism among the study group.
 - The study also covered a mix of rural and urban residents. Of the participants, 64 women (38.60%) were from rural areas, while 102 women (61.40%) were from urban areas. This distribution is reflective of the broader regional population and may influence the health outcomes observed.
 - Educational levels varied significantly among participants. There were 23 women (13.8%) with education below the 7th class, 45 women (27.10%) with education up to 10th class, 95 women (57.22%) with education up to 12th class, 23 women (13.94%) who were teachers, and 3 women (1.08%) with an undergraduate degree. The majority had education up to 12th class, indicating a generally moderate level of educational attainment.
 - Regarding marital duration, 39 women (23.64%) had been married for less than one year, 58 women (34.55%) for 1-5 years, and 68 women (41.21%) for 5-10 years. This distribution suggests a mix of newlyweds and those with more established marriages.
 - The study examined the period of gestation at which ASB was detected 138 cases (83.64%) were between 28-34 weeks, and 27 cases (16.2%) were more than 37 weeks. At birth, there were 11 preterm deliveries (6.67%) and 154 term deliveries (93.33%). This data indicates a high prevalence of term deliveries and a relatively low rate of preterm births.
 - A significant aspect of the study was the prevalence of UTIs among the participants. 15.66% of the cases were positive for UTIs, out of which 26(15.66%) with all positive cases showing *E. coli* growth after 48 hours of culture. All *E. coli* strains were sensitive to Nitrofurantoin, and one case of acute pyelonephritis was identified. These findings underscore the importance of effective screening and management of UTIs during pregnancy.
 - Postpartum periods for all participants were reported to be uneventful, indicating that there were no significant complications or adverse events following delivery.
 - The main findings reveal a high prevalence of preterm births and a notable frequency of asymptomatic bacteriuria detected primarily between 28 and 34 weeks of gestation. The study population was predominantly urban and included a diverse range of occupations.
 - The mode of delivery was almost evenly split between lower segment cesarean sections and vaginal deliveries, suggesting a balanced approach to obstetric care. Antenatal complications such as hypertensive disorders of pregnancy, hypothyroidism and hyperthyroidism were present but not overly common. Most deliveries were uneventful, though there were instances of birth asphyxia, breech presentation, meconium-stained amniotic fluid, and preterm premature rupture of membranes.
 - Neonatal outcomes showed that preterm birth was significantly prevalent, with a substantial number of infants admitted to the NICU, mainly for transient tachypnea of newborn, followed by hyperbilirubinemia and meconium aspiration syndrome. Apgar scores generally indicated moderate depression at birth, with a smaller proportion of infants scoring in the excellent range.

- In culture-positive cases, the outcomes were relatively favorable, with lower incidences of adverse neonatal conditions such as low birth weight and intrauterine growth restriction.
- Conclusion
- The high prevalence of ASB detection between 28 and 34 weeks highlights the importance of routine screening and timely intervention to mitigate risks. The association of ASB with preterm birth, low birth weight, and other neonatal complications emphasizes the need for vigilant management to prevent adverse outcomes. Effective treatment of ASB in pregnant women is essential to reduce the risks of preterm delivery and associated neonatal complications.
- Overall, the study highlights the need for continued monitoring and management of antenatal conditions to address preterm births and their associated complications. The findings highlight areas for potential improvement in antenatal care and neonatal support to enhance outcomes for both mothers and infants

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