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“Comparison between vaginal fluid urea and creatinine versus nitrazine test for diagnosis of premature rupture of membranes in pregnant women of gestational age 28 weeks to 34 weeks

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INTRODUCTION

Premature rupture of membranes (PPROM) is a significant obstetric complication, particularly in pregnancies between 28 and 34 weeks of gestation. Early and accurate diagnosis is critical for reducing adverse maternal and neonatal outcomes. This study aimed to compare the diagnostic reliability of vaginal fluid urea and creatinine levels with the Nitrazine test in identifying PPRM.

OBJECTIVES/AIMS

The objective of this study is to compare the reliability of nitrazine versus urea and creatinine in the diagnosis of premature rupture of membrane (PPROM)

METHODS

This comparative study was conducted at the Obstetrics and Gynecology Department, Unit II, Lady Willingdon Hospital, Lahore. A total of 60 pregnant women between 28 and 34 weeks of gestation were enrolled and divided equally into two groups: cases (PPROM confirmed by clinical examination) and controls (no history or suspicion of PPRM). Vaginal fluid samples were collected using sterile techniques and analyzed for urea and creatinine levels. Additionally, the Nitrazine test was performed to compare its diagnostic accuracy. Data were analyzed using SPSS version 26, and statistical significance was set at $p \leq 0.05$.

Results

The mean age of participants was 35.4 ± 3.04 years in the case group and 35.2 ± 3.1 years in the control group. The Nitrazine test demonstrated a specificity of 100% and a sensitivity of 87.5%, making it the most accurate diagnostic tool. Vaginal fluid creatinine showed a sensitivity of 66.7%, while urea demonstrated the lowest sensitivity at 56.7%.

Table-1: Comparison of gestational age distribution between groups

Gestational age	Groups		Total
	Cases	Controls	
28-31 weeks	14	15	29
	46.7%	50.0%	48.3%
31-34 weeks	16	15	31
	53.3%	50.0%	51.7%
Total	30	30	60
	100.0%	100.0%	100.0%

Table-2: Evaluation of nitrazine test in the diagnosis of PPRM

Nitrazine test	Groups		Total	Sn=86.7%, Sp=100.0%, PPV=100.0%, NPV=88.2%, DA=93.3%
	Cases	Controls		
Positive	26	0	26	
Negative	4	30	34	
Total	30	30	60	

Table-9: Evaluation of the cutoff points of urea in the diagnosis of PPRM

Urea test (>12.7 mg/dl)	Groups		Total	Sn=82.7%, Sp=83.3%, PPV=87.3%, NPV=85.7%, DA=85.0%
	Cases	Controls		
Positive	17	5	22	
Negative	13	25	38	
Total	30	30	60	

Table-10: Evaluation of the cutoff points of creatinine in the diagnosis of PPRM

Creatinine test (>0.8 mg/dl)	Groups		Total	Sn=83.7%, Sp=86.7%, PPV=84.1%, NPV=83.6%, DA=81.7%
	Cases	Controls		
Positive	20	7	27	
Negative	10	23	33	
Total	30	30	60	

Conclusion: Nitrazine test has diagnostic potential for premature rupture of membranes in pregnant women with gestational ages ranging from 28 to 34 weeks. While urea and creatinine, has limitations in sensitivity and precision. For accurate diagnosis in preventing adverse outcomes for both the mother and fetus, there remains a necessity to identify alternative cost-effective, highly sensitive, and precise biochemical markers that could aid in the identification of PPRM, particularly in challenging cases.