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A RESEARCH STUDY TO FIND OUT THE BEST AVAILABLE STREPTOCOCCUS AGALACTIA LABORATORY TECHNIQUE IN TERMS OF COST-EFFECTIVENESS, LABOR AND CONFORMITY

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Abstract:

Background: *In order to identify the colonization standard of near-term pregnant women, many techniques have been employed. While on the most suitable technique, there is a shortage of consensus. Three different methods have been explained in this study and their sensitivity and specificity in performance is discussed.*

Objective: *The study aimed at the assessment of the reliability of three laboratory techniques in the detection of group B streptococcus (Streptococcus Agalactias) (GBD) in near-term pregnant women. The laboratory techniques include direct culture on selective blood agar, direct culture on Islam agar and subculture after enrichment with Lim broth on Islam agar.*

Materials and Methods: *Total 200 near-term pregnant females of all ages were included in the study which was organized at Allied Hospital, Faisalabad (October 2017 to May 2018). These women were in the age bracket of 35 – 37 weeks of gestation. For the assessment of swabs from vaginal introitus, they were cultures on 4 medians. A criterion was set on the basis of which reactivity and particularity of each media, were measured.*

Results: *The reactivity and specificity of different methods were measured. The reactivity of blood agar, Islam Agar, and LIM enriched Agar was 93.3%, 98% and 100% respectively. The cases observed positive for GBS on given criteria were 32. Sixteen percent was the observed incidence.*

Conclusion: *After LIM enrichment, the technique was better on the basis of its activity and cost is subculture on Islam Agar.*

Keywords: *Agar, Islam Agar, LIM Agar, Blood Agar, Specificity, Sensitivity and Pre-Term.*

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INTRODUCTION:

The genital tracts, particularly those of pregnant women may be dumped up by group B streptococci (GBS). GBS are gram-positive Cocci [1]. In approximately 80% – 85% of the cases, there observed transmission of Streptococcus from mother to the neonate during normal vaginal delivery. So, there may exist the chances of pneumonia, neonatal sepsis and meningitis. Therefore, for the prevention of complexities associated with this organism, there is a need for identification of pre-delivery GBS colonization status [2]. In order to identify GBS colonization status, the current screening too that have been inspected are PCR [3] and LCR [4]. These techniques are very costly so impossible to carry out through their efficiency is good. After LIM enrichment, the technique that is better on the basis of its activity and cost is a culture on selective blood agar [5]. Direct culture on chromogenic agar, subculture after enrichment with LIM broth on Islam Agar and culture on selective blood Agar are some other suitable techniques [6]. The activity of all of these three techniques is similar to each other. The study aimed at assessment of the reliability of three laboratory techniques in the detection of group B streptococcus (Streptococcus Agalactias) (GBD) in near-term pregnant women. The laboratory techniques include direct culture on selective blood agar, direct culture on Islam agar and subculture after enrichment with Lim broth on Islam agar.

MATERIALS AND METHODS:

Total 200 near-term pregnant females of all ages were included in the study which was organized at Allied Hospital, Faisalabad (October 2017 to May 2018). These women were in the age bracket of 35 – 37 weeks of gestation. For the assessment of swabs from vaginal introitus, they were cultures on 4 medians. A criterion was set on the basis of which reactivity and particularity of each media, were measured. The agreement was signed by each participant. Those women were not selected for the study who were taking antimicrobial for some reasons or with known vaginal infection. Cotton swab for the collection of vaginal specimen and the sterilized disposable cotton swab was used for gathering another vaginal specimen. For assessment of swabs from vaginal introitus, they were cultured on selective blood agar and Islam agar. After enrichment by LIM broth, the sub-culturing was continued on these two media.

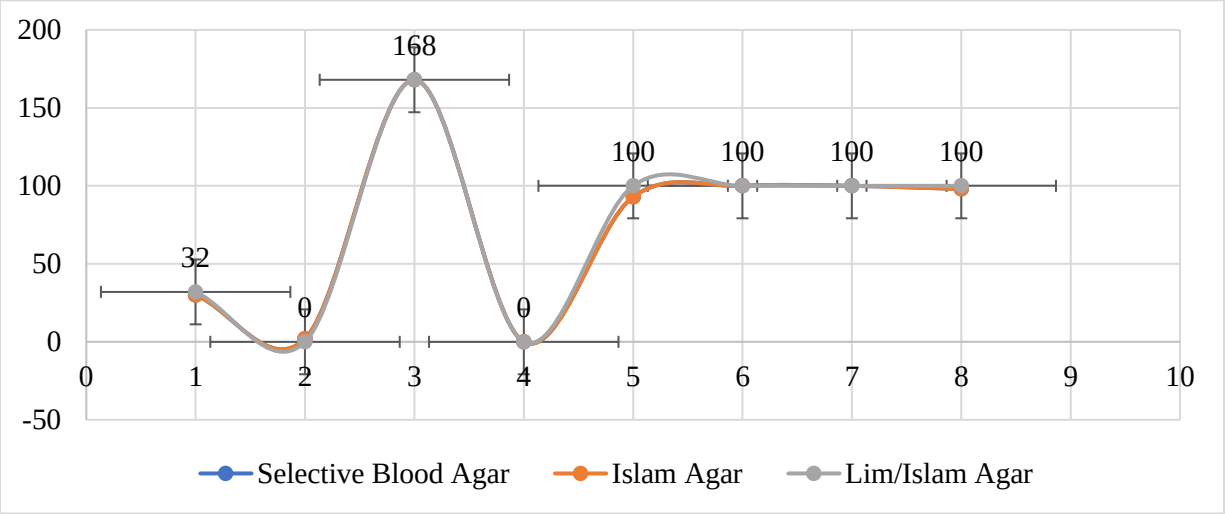
By using a confirmatory test like gram staining, CAMP test and catalase test, the organism was identified. While by observing characteristics aspects, the colony was identified. Performance and cost analysis were also measured. For the measurement of positive and negative predictive values along with function and reactivity test, we used a 2X2 table. Those factors were considered that could influence the cost but directly cost was not measured. The time period was measured that was required for finishing each method. SPSS was used for data entry and assessment.

RESULTS:

After 72 hours, the formation of the colony was checked on LIM/selective blood Agar. When no colony was produced, it was taken as negative. The cases that were negative were 168. Their conformity tests were negative too. The cases observed positive for GBS were 32. On LIM/SBA 2 cases were found positive but these cases were negative on Islam Agar. 30 cases were found positive on direct culture on Islam Agar. 2 cases that were negative on selective blood agar were found positive on LIM/SBA. Moreover, on selective blood agar, 30 cases were positive. 32 cases identified on LIM/SBA were positive on LIM/Islam Agar. The reactivity and specificity of different methods were measured. The reactivity of Blood Agar was 93.3%, 98%, 93.3%, 9.8% and 100%, 100% respectively.

Table: Agar Method Wise Stratification

Method		Selective Blood Agar	Islam Agar	Lim/Islam Agar
Number	True Positive	30	30	32
	False Negative	2	2	0
	True Negative	168	168	168
	False Positive	0	0	0
Statistics	Sensitivity	93	93	100
	Specificity	100	100	100
	Positive Predictive value	100	100	100
	Negative Predictive value	98	98	100



DISCUSSION:

For the assessment of GBS colonization status of near-term pregnant women, newer methods have been inaugurated for the previous ten years. PCR and LCR are some used techniques [3, 4]. The main problem was related to perinatal morbidity and mortality. Therefore, that test would be perfect which is cost-effective, easy to handle, take less time and has effective outcomes. Cost of kit, reagents and materials, labour and confirmatory tests are some aspects that are associated with the cost of test. The time duration needed for finishing a test is directly linked with labour cost. It is indicated by the outcomes that Islam Agar and Selective Blood Agar are similar in effectivity but as compare to subculture on Islam Agar after LIM enrichment, these are less effective. Various suggestions are involved in this 2% extra indication. Firstly, any of the positive cases should not be avoided. Secondly, it is considered to enhance cost by various aspects if we establish such algorithm that at first step direct culturing is carried out followed by subculturing in case of being negative. The outcomes of our research indicated that many users are noticed on subculture after LIM enrichment. 36 hours was the average time of finishing. 12 hours of LIM enrichment was also included. Secondly, the requirement of the second culture will be prevented through it. Thirdly, it will decrease the cost associated with confirmatory tests as it develops orange colour. The results of our research are comparable with the LDL suggestions, which suggest LIM enrichment [6]. Similar results are shown by other authors [7 – 9].

CONCLUSION:

It was concluded that after LIM enrichment, the technique that was better on the basis of its activity and cost is subculture on Islam Agar. Its reactivity, negative predictive values and positive predictive values were similar to conventional blood agar. The colonization status of females is normal. Reports are available 12 hours before. Furthermore, the cost can be saved related to second culture, confirmatory tests and extra time.

REFERENCES:

1. El-Kirsh TA, Al-Nuaim LA, Kharif TA, Al-Shammary FJ, Al-Saleh SS, Al-Zamel FA. Detection of genital colonization of group B streptococci during late pregnancy. Saudi Med J 2002 Jan; 23:56-61.
2. Fatima F, Chamani-Tabriz L, Pakzad P, Zcraati H, Rabbani H, Asgari S. Colonization rate of Group B Streptococcus (GBS) in pregnant women using GBS Agar Medium. Acta Medica Iranica 2009; 47:25-30.
3. Krohn MA, Hiller SL, Baker CJ. Maternal peripartum complication associated with vaginal group B streptococcal colonization. J Infect Dis 1999; 179:419-23.
4. Park, C. Detection of group B streptococcal colonization in pregnant women using direct latex agglutination testing of selective broth. Med Sci 2001; 22:97-112.
5. Shibuya R, Yamashita T, Shibuya S, Hasegawa M, Kanayama A, Ikeda F et al. Evaluation of three selective enrichment media for detection of Group B Streptococcus in vaginal swabs. Kanscnshogaku Zasshi 2009; 83:52-5. Prevention of perinatal group B streptococcal disease. Revised guidelines from CDC, 2010. MMWR. 2010;59 (RR-10): 1 -32.

6. Heelan JS, Struminsky J, Lauro P, Sung CJ. Evaluation of a new selective enrichment broth for detection of group B streptococci in pregnant women. J Clin Microbiol 2005; 43:896-7.
7. Schuchat A. Group B streptococcus. Lancet 1999; 53:51-6.
8. Edward MS, Baker CJ. Infectious Diseases of the Fetus and Newborn Infant 2001.Philadelphia: WB Saunders: 1091-1156.