

Association between Irregular Labour Pains and Meconium in Low-Risk Pregnancies

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Author's Contribution

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^{1,3,4,6} Analysis/Interpretation/Discussion

^{1,3,5} Manuscript Writing

^{4,5} Critical Review

^{2,6} Facilitation and Material analysis

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Abstract

Introduction: Meconium-stained amniotic fluid (MSAF) is a predictor of poor perinatal outcome especially in low-risk pregnancies, so it can be taken as one of the markers of fetal distress.

Objective: The objective of our study is to determine the frequency of MSAF in low-risk pregnancies presenting with irregular labour pains between 37 to 40 weeks of gestation.

Materials and Methods: This was a Descriptive case series conducted in Gynae / Obs Unit II, Holy Family Hospital, Rawalpindi from December 2020 to May 2021. All patients registered in the labour room of Obs/Gynae Unit-II between 37 to 40 weeks were evaluated for the occurrence of irregular labour pains, with the help of history and clinical examination. The presence of meconium-stained amniotic fluid in low-risk pregnancies presenting with irregular labour pains was noted

Results: Out of 120 low-risk pregnant women presenting with irregular labour pains, meconium was found positive in 77 (64.2%) pregnant women. Out of which majority 45 (37.5%) was 26-30 years old. Among 36 (30.0%) pregnant women who were 19-25 years old, meconium was found positive in 21 (17.5%) pregnant women. Among 45 (37.5%) pregnant women who were 26-30 years old, meconium was found positive in 32 (26.7%) pregnant women. Likewise among 39 (32.5%) pregnant women who were 31-38 years old, meconium was found positive in 24 (20.0%) pregnant women.

Conclusion: Meconium-stained amniotic fluid was prevalent in the majority of the women (64.2%) who presented with irregular labour pains and were categorized as low risk. The mean age of women in our study was 28.05 years. MSAF was found positive among all three age groups but it was more prevalent in the age group 26-30 years.

Keywords: Meconium stained amniotic fluid, low-risk pregnancies, irregular labour pain, fetal distress.

Introduction

Clear liquor is a reassuring sign in labour.¹ Meconium is believed to be fetal gut content released in utero in different conditions. One of the concerning reasons for meconium release in utero is presumed fetal distress. Meconium-stained liquor is a frequent occurrence in obstetrics. This is considered an ominous sign and puts the mother at increased risk of intervention. Though meconium-stained liquor in isolation does not prove fetal distress and is considered in combination with CTG and fetal scalp pH sampling to assess fetal status during labour. According to RCOG, significant MSL is termed as the dark green or black amniotic fluid that is thick and tenacious and consists of lumps of meconium.

Meconium is associated with increased neonatal morbidity and mortality. It is thought to put a fetus at risk of fetal distress and fetal acidosis, hypoxic-ischemic encephalopathy as well NICU admission, meconium aspiration syndrome, and respiratory distress syndrome.²

Diagnosing meconium-stained liquor early in labour may prevent associated complications. Many studies are conducted on the diagnosis of meconium-stained liquor during the antenatal period and early labour. Diagnosis of meconium-stained liquor with ultrasound is not reliable. The only reliable method to diagnose meconium-stained liquor is to rupture fetal membranes and see the colour of the liquor.³

Artificial rupture of membranes is not done as routine for every labouring patient. When there is poor progress of labour, artificial rupture of membranes to facilitate local prostaglandin release is a recommended practice. Early artificial rupture of membranes to see the colour of the liquor is done by many obstetricians when there is reduced liquor volume on ultrasound or suspicious CTG trace.^{4,5} Another condition when obstetricians lean towards early artificial rupture of the membrane to see the colour of the liquor is when the patient is having irregular uterine contractions.

Irregular uterine contractions are painful uterine contractions occurring infrequently without causing cervical change. Such types of contractions are reported by many patients at term and are a concern to the patient as well as the attending obstetrician.⁶ Irregular labour pains are believed to be stressful to the fetus and this stress can exhibit itself in form of meconium staining of liquor.⁷

We planned this study to objectively quantify the relationship between any meconium-stained liquor and irregular pains. As if any such association is

proved this may help the obstetrician justify a policy of early ARM in patients presenting with irregular labour pains.

Materials and Methods

This was a Descriptive case series conducted in Gynae / Obs Unit II, Holy Family Hospital, Rawalpindi from August 2020 to January 2021. The sample size was 120 calculated by the WHO calculator. The sampling technique was consecutive sampling (non-probability). Hospital ethical committee approval was taken before starting the study. All patients registered in the labour room of Obs/Gynae Unit II between 37-40 weeks were evaluated for the occurrence of irregular labour pains, with the help of history and clinical examination. The presence of meconium-stained amniotic fluid in low-risk pregnancies presenting with irregular labour pains between 37-40 weeks was noted. A cutoff value of 12 hours for irregular labour pains was taken and after that elective amniotomy was done to see the colour of liquor and delivery was planned accordingly. Informed written consent was taken from all patients before enrollment in the study. All relevant information was recorded on specified Performa. Confidentiality was ensured through a unique identifier for each patient and names were not recorded on the Performa. Data collected was used strictly for medical research and peer-reviewed publications. Data were analyzed by using SPSS version 25. Frequency and percentages were calculated for qualitative variables like MSAF. Mean and standard deviation was calculated for age, parity, and gestational age. Qualitative variables were presented through tables and graphs.

Results

To acquire appropriate outcomes a cohort of 120 pregnant women was included in the study. Table 1 demonstrates that out of 120 pregnant women who presented with irregular labour pains and fell in a category of low risk, meconium was found positive in 77 (64.2%) pregnant women while meconium was found negative in 43 (35.8%) pregnant women. The z value calculated for this was 4.38 and the value of p is <0.00001 which was significant. Table 2 exhibits that out of 120 pregnant women, 36 (30.0%) were 19-25 years old and the majority 45 (37.5%) was 26-30 years old while 39 (32.5%) pregnant women were 31-38 years old. The mean age of pregnant ladies was 28.05

with a standard deviation of 4.354. Among 36 (30.0%) pregnant women who were 19-25 years old, meconium was found positive in 21 (17.5%) pregnant women and negative in 15 (12.5%) women. Out of 45 (37.5%) pregnant women who were 26-30 years old, meconium was found positive in 32 (26.7%) pregnant women and negative in 13 (10.8%) women. Likewise among 39 (32.5%) pregnant women who were 31-38 years old, meconium was found positive in 24 (20.0%) pregnant women and negative in 15 (12.5%) pregnant women.

Table 1: Frequency Distribution of Pregnant Women according to Meconium

	Frequency	Percentage (%)
Positive	77	64.2
Negative	43	35.8
Total	120	100.0

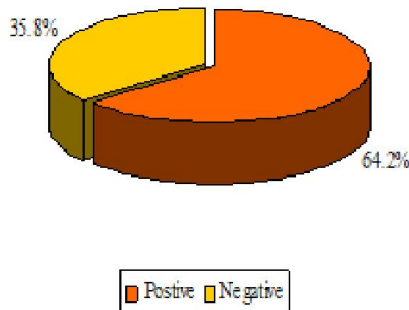


Figure 1:

Calculated z value=4.38

Table 2: Frequency Distribution of Pregnant Women according to Age

	Frequency	Percentage (%)
19-25 years	36	30.0
26-30 years	45	37.5
31-38 years	39	32.5
Total	120	100.0
Mean	28.05	
Standard deviation (SD)	4.354	

Table 3: Comparison between Age of Pregnant Women and Presence of Meconium

Age	Meconium		
	Positive	Negative	Total
19-25 years	21 (17.5%)	15 (12.5%)	36 (30.0%)
26-30 years	32 (26.7%)	13 (10.8%)	45 (37.5%)

31-38 years	24 (20.0%)	15 (12.5%)	39 (32.5%)
Total	77 (64.2%)	43 (35.8%)	120 (100.0%)
P-value	0.92		

Discussion

Meconium-stained amniotic fluid is one of the common findings in term pregnancies and the incidence can be as high as 30% in postdate pregnancies. The presence of meconium represents intrauterine fetal distress and hypoxia.⁸ Meconium aspiration syndrome causes significant respiratory distress immediately after delivery. The association between irregular labour pains between 37 to 40 weeks and meconium in low-risk pregnancy was found too high in our study. This discrepancy in results in comparison to other studies maybe because of the difference in the accessibility and the qualities of services available in our study settings. As we had done our study in one of the tertiary care referral hospitals which had a wide catchment area and the majority of the patients referred to this setup already had predisposing factors for MSAF and can be complicated by its presence. The study conducted by Maymon and colleagues confirmed a 16.6% prevalence of meconium-stained amniotic fluid while our study showed 64.2%.⁹ The study carried out by Zindeh and Sunna also demonstrated 10.0% of patients with meconium.¹⁰ Likewise, another study was done by Swain et al also confirmed a 13.97% prevalence of meconium-stained amniotic fluid in pregnant women.¹¹ The study conducted in Kolkata, India by Chakraborty and associates asserted that 30.4% of pregnant women were recorded with meconium-stained amniotic fluid.¹² These figures are quite close to ours maybe because of the close demographic area. The association of MSAF with null parity is still not clear based on the demographic characteristics of the existing studies.^{13,14} Our study revealed that the mean age of the women with irregular labour pains and MSAF was 28.05 years which were compared with the study conducted by Amjad and coworkers who reported the mean age of the pregnant women was 25.77.¹⁵ Another study conducted by Tayade confirmed that mean age of the pregnant women was 23.02 years.¹⁶ The women's age doesn't show a significant association with the development of MSAF. This finding was also found in one of the studies done at Indira Gandhi Medical College.¹⁷ This might be because of the similarities in socio-demography,

quality of service, and health institution. Age and meconium association was also observed in our study and found that the meconium was positive among the majority (26.7%) of women who were 26-30 years old while 17.5% and 20.0% pregnant women who were 19-25 and 31-38 years old respectively. The results of our study were comparable with the study conducted in India by Itagi who confirmed that meconium was observed in 79.0% of women less than 25 years while 19.5% women 26-30 years and 1.5% women more than 30 years were also had meconium positive.^{18,19} Another similar study done in Rajiv Gandhi University of Health Science, Bangalore, Karnataka, India by Sahu elucidated that 83.0% of women less than 25 years had meconium positive while 17.0% of women aged 26-30 years were found positive with meconium.²⁰ A study conducted in Ethiopia showed that a longer duration of labor has a statistically significant association with meconium-stained amniotic fluid.

Our study shows some limitations because it is a descriptive case series study and hence it is not possible to establish a strong relationship between MSAF and other variables. As we conducted our study in a single referral tertiary care setup, the results might not be representative of other setups and communities as well. In the future any study conducted with more sample size and adding more variables that predict perinatal outcome like APGAR score, NICU admission, grades of meconium, etc. will strengthen the study and will prove to be more fruitful for the future.

Conclusion

Meconium-stained amniotic fluid (MSAF) is often observed in the labour suites and delivery unit. It is a major problem and adversely affects fetal outcomes. The prolonged latent phase and irregular labour pains have a profound impact on meconium staining of amniotic fluid in low-risk pregnancies. So after diagnosis of irregular labour pains pregnancy should be intervened timely to avoid any hazards in the baby secondary to meconium staining of amniotic fluid.

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