



ORIGINAL ARTICLE

Frequency of puerperal pyrexia with meconium stained amniotic fluid.

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ABSTRACT... Objective: To determine the association of meconium stained amniotic fluid with puerperal pyrexia. **Study Design:** Cohort Study. **Setting:** Department of Obstetrics & Gynecology, Nishtar Hospital, Multan. **Period:** 1st January 2018 to 31st December 2018. **Material & Methods:** A total of 66 women with singleton pregnancy, gestational age 37-40 weeks of any parity undergoing elective caesarean section were eligible for study. Patients with rupture of membranes (≥ 18 hours), preterm delivery and postdate pregnancy were excluded. During elective caesarean section, after rupture of membranes, women were divided in two equal groups. Thirty three patients with meconium stained liquor group (MSAF) and 33 patients with clear liquor group. Puerperal pyrexia was defined as temperature of $\geq 38^{\circ}\text{C}$ on any two occasions was reported during first ten days postpartum excluding first 24 hours. Frequency, percentage and mean \pm SD were presented for variables. Chi-square test was applied to compare puerperal infection in both groups taken $p \leq 0.05$ as significant. **Results:** Age range in this study was from 15 to 45 years with mean age of 29.5 ± 2.5 years in MSAF group while 28.5 ± 3.5 years in clear liquor group. Mean gestational age was 39.1 ± 1.0 weeks in MSAF group while 38.5 ± 1.10 weeks. Puerperal pyrexia was seen in 45.5% patients in MSAF group as compare to 10% in clear liquor group ($p=0.005$). **Conclusion:** There is strong correlation between meconium stained amniotic fluid and postpartum febrile illness.

Key words: Amniotic Fluid, Chorioamnionitis, Endometritis, Meconium, Meconium Stained Liquor, Puerperal Sepsis, Postpartum Infection.

INTRODUCTION

Meconium stained amniotic fluid results in a passage of fetal fecal matter during intrauterine atmosphere as a result of fetal distress or chorioamnionitis.¹ The frequency of MSAF ranges from 5% and 20% however being rare in preterm pregnancies and patients undergoing elective cesarean section.^{2,3} James reported its frequency by 30 % at 37 weeks and 40% at 41 weeks.⁴ There are many risk factors associated with meconium stained liquor like advance maternal age, multiparity, lack of antenatal care, postdate pregnancy, prolong labour and longer duration of rupture of membranes.⁵ The risk of cesarean section and operative vaginal delivery are almost double in deliveries complicated by meconium-stained amniotic fluid.³ MSAF is considered a reliable indicator of fetal response to stress and is evident by non-reassuring fetal heart trace

and low Apgar scores.⁶ Aspiration of meconium may result in the increase in perinatal mortality and morbidity especially in post term pregnancy.⁷ MSAF is one of the major reason of pulmonary hypertension, hypoxic ischemic encephalopathy, seizures and cerebral palsy of the newborns.⁸

The meconium-stained amniotic fluid not only carries the risks to the newborn but also increases maternal complications. Clinical chorioamnionitis and funisitis is higher in meconium-stained amniotic fluid.⁹ Many microorganisms are histologically isolated from the amniotic fluid cultivation in meconium-stained amniotic fluid which results in clinical endometritis.¹⁰ Pregnant women with MSAF had increased risk for intrapartum febrile illness along with puerperal infection being more evident in the presence of thick meconium.¹¹ Frequency of positive amniotic fluid cultures after

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amniocentesis is dramatically higher in those with MSAF in preterm pregnancy than term. Adair reported that intrapartum antibiotic administration results in reduced endometritis in MSAF in 1996.¹² Since then it has been neglected part on behalf of research and later Siriwachirachai addressed his doubt about the use of antibiotics for the primary prevention of postpartum endometritis resulting from chorioamnionitis especially with meconium stained liquor.¹³ Treatment of vaginal infections before labor, limited vaginal examinations, strict use of internal monitoring during labor and avoidance of cesarean section may reduce the peripartum infection rate. If cesarean delivery is mandatory then prophylactic antibiotics must be given at the induction of anesthesia.

Puerperal infection is not uncommon in low resource countries and its minor causative risk factors are not studied well especially. Review of literature showed that MSAF as an evident risk factor for puerperal infection resulting from chorioamnionitis due to endometritis.¹⁴ Some studies do not favour this hypothesis. Roberto Romero stated that clinical chorioamnionitis at term is heterogenous condition and few patients have proven intramniotic infection.¹⁵ Therefore it is necessary to study the association of meconium stained amniotic fluid with puerperal infectious morbidity and puerperal pyrexia. Our study is going to impact on the proper management of MSAF during labour by administering prophylactic antibiotics to minimize the infectious morbidity in women.

MATERIAL & METHODS

A Cohort Study was performed in obstetrics & gynecology department, Nishtar Hospital, Multan from 1st January 2018 to 31st December 2018. The non-probability consecutive sampling was used and included total 66 patients, 33 patients in meconium stained amniotic fluid (MSAF) group and 33 patients in clear amniotic fluid group after the rupture of membranes during elective cesarean section. This study included women with singleton pregnancy of 37-40 weeks gestation underwent elective caesarean section. Patients with prolong rupture of membranes (≥ 18 hours), fetal distress and postdate pregnancy

were excluded. The permission from ethical committee of the hospital was obtained.

The patients were completely informed about study and a written informed consent was taken from all of them. Patients were evaluated and basic demographics like age, gestational age and parity were noted. Caesarean sections were done by a consultant gynecologist of 3 years post fellowship experience. All the mothers received prophylactic intravenous ceftriaxone one gram at the induction of anesthesia then two more doses within twenty four hours of surgery. Puerperal pyrexia was defined as a temperature of $\geq 38^{\circ}\text{C}$ on any two occasions of first ten days postpartum excluding first 24 hours. Data was collected and analyzed with statistical package for social sciences (IBM-SPSS-V-21). Frequency and percentage were computed for the qualitative variables like parity, grade of meconium stained fluid and puerperal infection. Mean \pm SD was used for quantitative variables like age and gestational age. Stratification of meconium stained fluid grades to puerperal infection was performed. Chi-square test was applied to compare puerperal pyrexia in both groups and $p \leq 0.05$ was considered significant.

RESULTS

Table-I. Presented the age range from 15 to 45 years with mean of 29.5 ± 2.5 years in MSAF group while 28.5 ± 3.0 years in clear liquor group. Mean gestational age was 39.1 ± 1.0 weeks in MSAF group while 38.5 ± 1.10 weeks in clear liquor group. Frequency and percentage of parity (Table-II) and meconium stained fluid grades in MSAF group are shown (Table-III). Puerperal pyrexia was seen in 45.5% patients in MSAF group as compared to 10% in clear liquor group ($p=0.002$) as shown in Table-IV. Stratification of Puerperal pyrexia in MSAF groups with regard to meconium stained amniotic fluid grades are shown in Table-V.

Parity	MSAF (n=33)	Clear liquor (n=33)
0-2	28 (84.8%)	29 (87.9%)
3-5	5 (15.2%)	4 (12.1%)
Total	33 (100%)	33 (100%)

Table-I. Mean \pm SD of patients according to age and gestational age in both groups (n=66)

Meconium Stained Fluid Grade	No of Patients	%age
I	6	18.2%
II	21	63.6%
III	6	18.2%
Total	33	100%

Table-II. Frequency and percentage of parity in both groups (n=66)

Demographics	MSAF n=33	Clear liquor n=33
Age(years)	29.000±2.27	28.212± 3.06
Gestational age (weeks)	39.1±1.10	38.5±1.10

Table-III. Frequency and percentage of patients according to meconium stained fluid grade in MSAF group (n=33)

Puerperal Infection	MSAF (n=33)	Clear liquor (n=33)	P-Value R.R
Yes	15 (45.5%)	3 (10%)	0.002
No	18 (54.5%)	30 (90%)	
Total	33 (100%)	33 (100%)	3.7

Table-IV. Comparison of puerperal pyrexia in both groups (n=66)

Meconium Stained Fluid Grade	Puerperal Pyrexia		P-Value
	Yes	No	
I	0(0%)	6(18.18)	0.005
II	7(21.22%)	5(15.15%)	
III	14(42.42%)	1(3.03%)	
Total	21(63.64%)	12(36.36%)	

Table-V. Stratification of puerperal pyrexia in association to meconium stained fluid grade in MSAF group (n=33).

DISCUSSION

Meconium stained amniotic fluid and its association with puerperal infection has been investigated for a long time.¹⁶ Observations followed by amniocenteses especially for preterm and retrospective analysis of labours with MSAF ignited their strong relationship with puerperal infections due to endometritis.¹⁷ We have performed this study to elaborate the association of MSAF and puerperal infection in women undergoing cesarean section without any other risk factor. In our observation puerperal infection is more common with meconium especially with thick meconium. Frequency of puerperal infection was 45.5% in meconium stained liquor and 12.1%

in clear amniotic fluid.

Panichkul reported the frequency of endometritis 33% with MSAF while 11% with clear amniotic fluid.¹⁶ Kavita reported 8% vs 2% endometritis with meconium stained liquor and clear amniotic fluid.¹¹ Brabbing Goldstein observed increased frequency of endometritis with meconium stained liquor than clear liquor.¹⁸ Hamaideh compared endomyometritis as 3.2% in deliveries with MSAF and 1.5% with clear amniotic fluid.¹⁹ Kavita observed chorioamnionitis and endomyometritis and strongly supports the use of antibiotics for the prevention of endometritis and puerperal pyrexia even in low risk laboring mothers.¹¹ Zbigniew reported that puerperal pyrexia is a marker of clinical endometritis where 70-90% amniotic fluid become colonized with microorganisms.²⁰ Their findings together with ours, emphasize the importance of recognizing meconium as an independent contributor to postpartum pyrexia and maternal morbidity especially in low resource settings.

CONCLUSION

In conclusion, meconium stained liquor results in postpartum pyrexia in significant number of mothers and it must be given particular importance in preventing febrile morbidity.




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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Hajira Sultana	Data Collectio, Study Design, Interpretation, Principal investigator, final reading.	
2	Saima Ashraf	Data collection, Interpretation, Principal investigator, final reading.	
3	Saima Yasmin Qadir	Data collection, Study design, Intrepretation, Principal Investigator, final reading, corresponding author.	
4	Shazia Siddiq	Data collection, Study Design, Interpretation, Principal investigator, final reading.	