ORIGINAL ARTICLE

Comparison of Obstetric outcome of Primigravida admitted in latent labor versus active labor in a tertiary care hospital

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ABSTRACT

Aim: To compare the obstetric outcome's differences between primigravida admitted in latent labour with primigravida admitted in active labor

Methods: It was a descriptive cross sectional study done from January to March 2020 at Arif Memorial Teaching Hospital including total 400 low risk nulliparous patients. Data was analyzed using SPSS 17 while considering a p value <0.05 significant.

Results: The two groups of patients were compared for the obstetric interventions like augmentation with oxytocin and amniotomy and it was observed that 64 (32%) patients vs. 36 (18%) patients with (p value <0.05) for augmentation and 85 patients (42.5%) vs. 46 (23%) patients with (p value < 0.05) for amniotomy were comparatively higher in latent group as compared to active labor admission respectively .Instrumental vaginal delivery 47 (23.5%) vs. 19 (9.5 %) and (p value < 0.05) and caesarean section 83 (41.5%) vs. 47 (23.5%) with (p value < 0.05) were higher in latent phase participants than active phase patients respectively. While SVD rates were higher in active phase participants than those admitted in latent phase 165 (82.5%) vs 103 (51.5%) and (p value <0.05). Maternal outcome like PPH 39 (19.5%) vs. 17(8.5%) with (p value <0.05) and genital tears 37 (18.5%) vs 25 (12.5%) and (p value <0.05) were observed more in latent phase than active phase patients respectively..

Conclusion: Admission in latent labor in low risk nulliparous patients is a risk factor for increased need for obstetrical interventions, operative delivery and adverse maternal and neonatal outcomes when compared with nulliparous participants admitted in active phase of labor.

Keywords: Primigravida, Latent Phase, Active phase, Obstetric outcome

INTRODUCTION

The latent first stage is a period of time characterized by painful uterine contractions and variable changes of cervix, including some degree of effacement and slow progression of dilatation up to 5cm for first and subsequent labors.

The active first stage is a period of time characterized by regular painful uterine contractions, a substantial degree of cervical effacement and more rapid cervical dilatation from 5cm until full dilatation for first and subsequent labors[1].

Nulliparous patients have no experience of labor and they find difficulty in determining proper timing to report in labor room[2]. The timing of admission in latent labor has a delaying impact on progress of labor in primigravida[3]. To differentiate between latent and active phase of labor is of utmost significance[4] as nulliparous patients admitted in latent phase tend to spend more time in labor room thus facing more obstetrical interventions like amniotomy, oxytocin augmentation and increased operative delivery and complications as compared to counterparts admitted in active phase of first stage of labor[5,6,7].

Admission in active labor helps to avoid premature obstetrical interventions in PGs with prolong latent phase. The reason for increased rate of intervention in latent phase may be misdiagnosed as labor arrest[8]. Women in latent labor experience more caesarean section and labor arrest than women admitted in active labor.

Received on 21-05-2020
Accepted on 13-11-2020

Whether inherent labor abnormalities result in early presentation leading to subsequent obstetrical interventions or early presentation with subsequent obstetrician interventions lead to abnormal labor is still unclear[9].

According to Bree Collaborative Obstetric Care Report, nulliparous Patients should be offered admission in active phase of labor provided there is no maternal and fetal compromise[10].

This study was conducted on low risk primigravidas to evaluate the effect of timing of admission (latent versus active phase) to labor room on progress of labor, need for obstetrical interventions, mode of delivery, maternal and perinatal outcomes.

MATERIALS AND METHODS

This study was carried out at the obstetrical unit of AMTH, affiliated with RLMC, for a period of three months i.e. January to March 2020. Total 400 patients meeting inclusion/exclusion criteria were included in the study. Out of 400 patients, 200 laboring patients who were admitted to labor room in latent phase i.e. cervical dilatation <5cm (group 1) were compared with 200 parturient patients in active phase of labor i.e. cervical dilatation ≥5cm (group 2).

Inclusion Criteria:

- All low risk PGs at term
- Less than 20 to more than 35 years of age
- Singleton pregnancy with cephalic presentation of fetus
- In spontaneous labor
- No added medical or obstetrical risk factor

Exclusion Criteria:

- Multigravida
- Malpresentation
- Twin gestation
- Pregnancy with medical or obstetrical risk factors
- Previous caesarean section or those due for induction of labor
- PGs in preterm labor

Ethical approval was taken from ethical review board of RLMC. Antenatal record of all participants was reviewed and all information was noted using a structured proforma. The information of study population was collected in the form of their demographic profile i.e. participant age, gestational age, her educational status and the interventions they received i.e. amniotomy, oxytocin infusion for augmentation of labor. Mode of delivery was documented either as spontaneous vaginal delivery, instrumental vaginal delivery and caesarean section. Any maternal complications like PPH, genital tract tears were noted. Fetal outcome like APGAR SCORE, NICU admission and length of stay of mother and baby in hospital were noted.

Data analysis was done using SPSS version 17. Categorical variables were presented as proportions and percentages. Numerical variables were presented as percentages. Chi square and p value was used to compare the difference and significance between the two groups for categorical variables.

RESULTS

In our results, majority of the nulliparous patients were between 20-35 years of age with 175 (87.5%) patients in the latent phase and 170 (85%) patients in the active phase group.188 (94%) patients in the latent phase and 185 (92.5%) patients in the active phase group presented in spontaneous labor between 37-38 weeks of gestation.145 (72.5%) vs 160(80%) patients in latent and active phase groups respectively were primary pass in our study.

The two groups of patients were compared for the obstetric interventions like augmentation with oxytocin and amniotomy and it was observed that 64(32%) patients vs 36(18%) patients with p value <0.05 for augmentation and 85(42.5%) vs. 46(23%) patients with p value <0.05 for amniotomy were comparatively higher in latent group than active group admissions respectively. Instrumental vaginal delivery 47(23.5%) vs. 19(9.5%) p value <0.05 and caesarean section 83(41.5%) vs. 47(23.5%) p value <0.05 were higher in latent phase than active phase admissions respectively. While SVD rates were higher in active phase participants than those admitted in latent phase i.e.165 (82.5%) vs. 103(51.5%) p value <0.05. Maternal outcome like PPH 39 (19.5%) vs. 17(8.5%) p value <0.05 and genital tears i.e. 37(18.5%) vs. 25(12.5%) p value <0.05 were observed in latent and active phase admissions respectively. Neonatal outcome like NICU admission and length of NICU stay for >72 hours was higher in neonates of latent phase admitants than active phase admitants i.e. 27 (13.5%) vs. 15(7.5%) p value <0.05 and 187(93.5%) vs. 177(88.5%) p value <0.05 respectively.

Table 1- Socio- demographic variables of the participants

Characteristics	Latent Phase	Active Phase
Gestation Age		
37-38 weeks	188(94)%	185(92.5%)
39-40 weeks	12(6%)	15(7.5%)
Age group (Years)		
< 20	20(10%)	23(11.5%)
20-35	175 (87.5%)	170(85%)
>35	5 (2.5%)	7(3.5%)
Education		
Illiterate	12(6%)	10(5%)
Primary	145(72.5%)	160(80%)
Secondary	43(21.5%)	30(15%)

Table 2: Association between latent vs. active phase of labor at time of admission with intervention during labor

Characteristics	Latent Phase	Active Phase	X^2	P-value
Augmentation with oxytocin				
Yes No	64(32%) 136(68%)	36(18%) 164(82%)	10.926	0.004
Amniotomy				
Yes No	85(42.5%) 115(57.5%)	46(23%) 154(77%)	11.301	0.0007

Table 3: Association of latent vs. active phase of labor at time of admission with mode of delivery

Characteristics	Latent Phase	Active Phase	X^2	P- value
SVD				
Yes No	103(51.5%) 97 (48.5%)	165(82.5%) 35(17.5%)	9.322	0.006
C/S				
Yes No	83(41.5%) 117(58.5%)	47(23.5%) 153(76.5%)	9.516	0.00009
Instrumental Vaginal delivery				
Yes No	47(23.5%) 153(76.5%)	19(9.5%) 181(90.5%)	7.620	0.03

Table 4: Maternal outcome in relation to latent vs active phase of labor at time of admission

Characteristics	Latent Phase	Active Phase	X^2	P-value
PPH				
Yes No	39(19.5%) 161(80.5%)	17(8.5%) 183(91.5%)	8.961	0.0005
Genital Tear				
Yes No	37(18.5%) 163(81.5%)	25 (12.5%) 175(87.5%)	8.338	0.002
Length of stay in hospital				
<72 hours ≥72 hours	171(85.5%) 29(14.5%)	187(93.5%) 13(6.5%)	7.981	0.0001

Table 5: Neonatal outcome in relation to latent vs. active phase of labor at time of admission

Characteristics	Latent Phase	Active Phase	X^2	P-value
Apgar score				
<7 ≥7	51(25.5%) 149(74.5%)	27(13.5%) 173(86.5%)	10.338	0.0000
NICU Admission				
Yes No	27(13.5%) 173(86.5%)	15(7.5%) 185(92.5%)	11.67	0.0031
Length of stay in NICU				
<72 hours ≥72 hours	23 (11.5%) 187(93.5%)	13 (6.5%) 177(88.5%)	9.731	0.0007

DISCUSSION

There is a never ending discussion amongst Pakistani obstetricians regarding need to lessen medical or surgical intrusion amongst nulliparous laboring patients so we compared the course of labor of low risk nulliparous patients admitted in latent phase with those admitted in active phase thus evaluating the association of time of admission in labor with subsequent pregnancy outcomes.

In low risk nulliparous obstetric population, the process of labor and delivery is considered to be normal physiological phenomenon. However in our local settings, the obstetric unit of a tertiary care hospital is considered as the preferred place of birth as it provides the safest environment for labor, delivery, neonate and postpartum period[11]. On the contrary, hospital environment is thought to be responsible for an undue increase in obstetrical interventions e.g. repeated CTGs of low risk nulliparous patients is associated with false +ve rates of fetal distress resulting in operative delivery[12].

Our study found that primigravida admitted in latent phase of labor had increased rate of obstetrical interventions than those admitted at cervical dilatation > 5cm.The most common intervention was **augmentation of labor** with oxytocin i.e., 64 (32%) primigravida in latent labor needed augmentation compared to 36(18%) in active phase of labour (p value <0.004). This finding is in comparison to the study of Albassam AN showing labor augmentation in nulliparous laboring patients i.e. 58.3% in latent labor vs. 41.5% in active labor and p value <0.05[13].

In our study, 85 (42.5%) primigravida in latent labor needed **artificial rupture of membranes** than 46 (23%) patients in active labor (p value <0.0007) showing that nulliparous patients in latent phase of labor needed more amniotomy than active phase parturient to accelerate the process of labor. This finding of our study can be compared with the research of Naureen Anjum etal in 2020 showing that 62.2% patients presenting at cervical dilatation of <4cm required more ARM than 40.9% late presenters[14].

This increased need for **augmentation** and **amniotomy** in latent phase in our study can be justified to shorten latent phase duration and to prevent maternal and neonatal complications. Also we noticed that undue pressure by patient's family for immediate delivery led to obstetrician anxiety thus resulting in more interference in natural process of labor. These observations of our study are in comparison to that of Hobson J in 2020[15].

Regarding **mode of delivery**, 103(51.5%) primigravida patients in latent phase delivered by **SVD** as compared to 165 (82.5%) patients in active labor (p value<0.006) so spontaneous vaginal delivery was significantly higher in patients admitted in active labor than those admitted in latent labor. This result is in accordance to the study of Tanaka K, 2017 concluding that patients who presented late in labor had a shorter duration of labor with lower rates of intervention leading to successful normal vaginal birth[16]. Similar results were observed from researches of Ethiopia and Bangladesh reconfirming that SVD was significantly higher in active phase nulliparous parturients[17,18].

47(23.5%) primigravida admitted in latent phase of labor had higher **instrumental vaginal delivery** than 19 (9.5%) patients admitted in active labor (p value<0.03).This result of our study is in contrast to that done by Clotrida Chuma who found no significant difference in operative vaginal delivery rates between the two groups[19]. The increased assisted vaginal delivery in our study can be justified by noticing that primigravida admitted in latent phase of labor, with emotional distress due to prolong latent phase along with higher levels of pains faced failure to push due to maternal exhaustion thus resulting in instrumental vaginal delivery. The same factor is also observed in another study[20].

41.4% primigravida admitted in latent phase ended up in **caesarean section** than 23.5% patients admitted in active labor (p value <0.00009).This finding can be compared with finding of Ellen Kaffman (21.8% vs. 14.5% , p value<0.01)[21]. The reason for increased rate of caesarean section in our study was because as our study population were primigravida having no prior experience of labor with more anxiety and low threshold for pain so they got admitted in latent phase of labor, where they underwent multiple interventions like amniotomy, augmentation, repeated CTG and were asked to bear down so as to reduce labor course. This all led to maternal exhaustion in second stage of labor leading to instrumental vaginal delivery. This admission in latent labor led to prolong labor room stay and yet baby to be born caused apprehension in patient and family members thus increased obstetrician anxiety, causing more augmentation of labor at poor Bishop Score and patient ended up in abdominal delivery. In addition, excessive use of electronic fetal heart rate monitoring resulted in diagnosis of fetal distress and increased caesarean section in latent phase nulliparous patients. This increased rate of caesarean section has been reported by other researchers too[22] So early admission in latent phase may reflect an underlying risk for CS independent of the care provided.

For **maternal outcome**, we conclude that both **PPH** and **genital tract tears** were more commonly seen in latent phase nulliparous patients than active phase patients i.e. (PPH 19.5% in latent phase vs. 8.5% in active phase, p value <0.0005) and (genital tract tears 18.5% in latent phase vs. 12.5% in active phase, p value <0.003). This finding is in contrast to that of Janna JR who reported more PPH and genital trauma in active phase primigravida admissions than latent phase admission i.e. (PPH 18.6% patients in active phase vs. 15.6% in latent phase, p value <0.01) and (genital tears 18.4% in active phase vs. 16.6% in latent phase, p value <0.05) respectively[17].

The **length of maternal stay** in hospital was found to be > 72 hours (14.5%) in patients admitted in latent phase than those admitted in active phase (6.5%) with a p value < 0.0001.This result is in comparison to the study done by Naghi Zadeh etal. who concluded that admission in latent phase of labor results in need for prolong hospitalization.[(23)] The reason for this is believed to be more obstetrical interventions resulting in increased operative vaginal and abdominal delivery in nulliparous study population admitted in latent phase than those admitted in active phase of labor.

As far as the **neonatal outcome** is concerned, the **APGAR score** was < 7 in 25.5% neonates of patients admitted at <4cm cervical dilatation as compared to 13.5% in neonates of nulliparous patients admitted at cervical

dilatation >4cm with a p value 0.00. Similarly the **NCIU admission** remained higher in neonates of primigravida who presented in early labor as compared to neonates of late presenters i.e. 7.5% with a p value <0.003.

The **length of stay in NICU** was found to be longer than 72 hours in neonates of primigravida admitted in latent phase than neonates of patients admitted in active phase i.e. (93% vs. 88.5%).

These findings in terms of neonatal outcome are in comparison to that done by Ajori et al who predicted lower Apgar score in patients admitted in latent labor than the neonates of patients admitted in active phase of labor. [24] Also Hodnett et al suggested that admission in latent labor is associated with low Apgar score, need for NICU admission and prolong NICU stay in the neonates when compared with neonates of patients admitted in active labor[25].

CONCLUSION

So on the basis of results of our research, we concluded that early hospitalization in low risk nulliparous laboring patients in latent labor might have resulted in need for more obstetrical interventions in the form of oxytocin augmentation, artificial rupture of membranes, increased frequency of assisted vaginal delivery and caesarean section , more maternal complications like PPH and genital tract trauma, increased length of hospital stay along with more neonatal complications like Apgar score <7, need for NICU admission and prolong hospitalization seen in newborns of those admitted in early labor.

RECOMMENDATIONS

1. Assessment for hospitalization in low risk primigravida in latent labor should be done by consultant obstetrician.
2. Appropriate counseling of the primigravida about the symptoms and signs of active labor should be done during their prenatal visits.
3. Integrated midwifery services to educate laboring nulliparous parturients and their family members in understanding the process of labor, its duration and labor pains.
4. Educate low risk nulliparous patients to present to hospital once in active labor for better fetomaternal outcome
5. By following these strategies, subsequent maternal and neonatal complications in primigravida, associated with latent phase hospitalization and undue interventions can be prevented and this in return will promote admissions in active labor.

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