

Duration of Labour with Spontaneous Onset at the University of Ilorin Teaching Hospital, Ilorin, Nigeria

Munir'deen A. Ijaiya, Kike T. Adesina, Hadijat O. Raji, Abiodun P. Aboyeji, AbdulWaheed O. Olatinwo, Abiodun S. Adeniran, Idowu O. Adebara and Salamat Isiaka-Lawal
Department of Obstetrics and Gynaecology, University of Ilorin Teaching Hospital, Ilorin, Nigeria

Abstract: Duration of labour varies from one pregnancy to another and an acceptable period of <12 h is regarded as normal. Modern obstetric practice involves active management of labour with the aim of preventing prolonged labour and its sequelae. The main objective of this study was to determine and compare the average duration of labour of spontaneous onset between nulliparas (Po) and multiparas ($p \geq 1$) and factors affecting duration of labour. This study was a prospective study carried out between May and June 2004 at the labour ward of the university of Ilorin teaching hospital, Ilorin, Nigeria. About 238 parturients met the inclusion criteria during the study period. The results indicated that the mean admission-delivery interval in labour ward and duration of labour (from onset of labour to delivery) was shorter among multiparous women; 3.77 vs. 5.00 h ($p > 0.05$) and 8.73 vs. 11.23 h ($p > 0.05$) in multiparas and nulliparas, respectively. The overall duration of labour was 9.50 h mean and 8.70 h median. About 174 (73.11%) patients delivered within 12 h of onset of labour. Only parity and maternal age had significant correlation with duration of labour in this study.

Key words: Spontaneous labour, duration, nullipara, multipara, Prolong, labour, obstet

INTRODUCTION

Neglected labour and its attendant complications contribute immensely to the unacceptably high maternal deaths recorded in the developing countries, Nigeria inclusive (Ijaiya *et al.*, 2009; Melah *et al.*, 2003). Although, there is a wide variation in the duration of labour, it has been found that there is an acceptable period that is considered normal. Usually, the range for the duration of labour is from 3-12 h. Labour lasting <3 h is classified as precipitate labour while those exceeding 12 h are said to be prolonged. Various studies have been conducted on labour duration with recent studies suggesting that the duration is on the decline in recent decades (Bergsjö *et al.*, 1979).

Duration of labour is affected by various maternal and foetal factors including maternal age, parity, maternal pain threshold, number of fetuses, fetal weight and fetal position. It is also affected by interventions like induction of labour, augmentation of labour and instrumental vaginal deliveries (Nesheim, 1988). Modern obstetric practice involves active management of labour with the use of partograph as the monitoring tool. The aim of active management of labour is to prevent prolonged labour. This is borne out of the fact that prolonged labour is associated with increased maternal and perinatal

morbidity and mortality (Ijaiya *et al.*, 2009; Melah *et al.*, 2003). Identified maternal morbidities include maternal exhaustion, electrolyte derangement, hypoglycaemia, a risk for obstructed labour and its attendant sequelae such as uterine rupture, primary postpartum haemorrhage and obstetric fistula.

Possible perinatal complications include fetal distress, risk for perinatal asphyxia increased risk for neonatal resuscitation and admission into neonatal intensive care unit as well as hypoxic ischaemic encephalopathy and cerebral palsy.

Of importance is the issue of labour dystocia generally referred to as a slow or difficult labour but it is known to be a poorly specific diagnosis usually misappropriated due to impatience and poor definition of labour progress in a parturient. This misdiagnosis has contributed to increase in caesarean section rate (Albers, 1999). The aim of the study was to determine the duration of labour with spontaneous onset at the University of Ilorin teaching hospital, Nigeria. The specific objectives were to determine and compare admission-delivery time interval between nulliparas and multiparas to determine and compare the duration of labour between nulliparas and multiparas and to determine the relationship between parity, birthweight, maternal age and fifth minute apgar score on duration of labour.

MATERIALS AND METHODS

The study was conducted at the Obstetrics and Gynaecology department of the University of Ilorin Teaching Hospital (UITH) Ilorin located in the middle belt of Nigeria between May and June 2004. It was a prospective observational study involving data collection and analysis of consecutive 238 labour cases that satisfied the inclusion criteria. The inclusion criteria were: labour of spontaneous onset with a singleton fetus at term in vertex presentation that eventually had spontaneous vertex delivery. Patients with pre-labour rupture of foetal membranes, instrumental vaginal deliveries or abdominal deliveries were excluded from the study.

Admission into the labour ward was in the active phase of labour defined as cervical dilatation of at least 4 cm. Labour was actively managed with the aid of partograph with amniotomy performed as soon as possible and vaginal examination repeated at 3-4 h interval unless otherwise indicated. Fetal heart rate monitoring was by intermittent auscultation using the Pinnard fetal stethoscope.

Augmentation of labour was by addition of 10 iu of oxytocin into one litre of intravenous infusion and titrated against uterine contractions until adequate uterine contractions were achieved. Analgesic agent used was intramuscular Pethidine or Pentazocine as required. Onset of labour was defined as occurrence of painful regular uterine contractions <10 min apart. Admission-delivery interval refers to how long it took from time of admission in the labour ward to time of delivery while the duration of labour means the time it took from the onset of labour to delivery.

This maternity hospital provides comprehensive emergency obstetric services. Everyday there are two or three midwives on each duty-shift, an intern, a registrar and a senior registrar in-charge of labour ward under the supervision of a consultant obstetrician. Patients

demographic data, labour history and intrapartum events were recorded on information data sheet and subsequently analysed. Central tendency, Pearson correlation and t-test were performed for data analysis using SPSS 14.0 software.

RESULTS

A total of 238 labour cases met the inclusion criteria and were analyzed. The age range was 16-38 years with an average of 28.34 years. Nulliparas (P0) and multiparas ($p \geq 1$) accounted for 75 (31.50%) and 163 (69.50%) cases, respectively. Of the 163 multiparas, Primiparas (P1) and grandmultiparas ($p \geq 5$) had the highest 70 (42.94%) and lowest 4 (2.45%) frequencies, respectively.

Table 1 shows the results of this study. The mean gestational age and cervical dilatation for nulliparous women at presentstion in the labour ward were 39.51 weeks and 5.40 cm while that of multiparous women were 39.63 weeks and 6.45 cm, respectively ($p > 0.05$). The overall mean admission-delivery time interval was 4.19 h. Nulliparas spent 5.00 h and multiparas spent 3.77 h ($p > 0.05$) in labour ward before delivery.

The overall duration of labour was 9.57 h mean and 8.70 h median. The mean duration of labour in nulliparas was longer than in multiparas (11.23 h versus 8.73 h; $p > 0.05$) the difference was not statistically significant. About 174 (73.11%) patients delivered within 12 h of onset of labour.

The overall average birth weight, 5th min apgar score and blood loss at delivery were 3.16 kg, 8.29 and 234.03 mL, respectively. There were significant differences in blood loss and 5th min apgar scores between nulliparas and multiparas ($p < 0.05$). Significant negative correlation at 0.01 level existed between maternal age and duration of labour as well as parity and duration of labour while there was positive correlation between parity and birth weight. There was no correlation between gestational age at delivery and duration of labour or between duration of labour and 5th min apgar scores.

Table 1: Parity against maternal age and labour variables

| Variables | Age (years) | Gestational age (weeks) | Cervical dilatation at presentation (cm) | Admission-delivery interval (h) | Duration of labour (h) | Birth weight (kg) | 5th min apgar score | Estimated blood loss (mL) |
|---|-------------|-------------------------|--|---------------------------------|------------------------|-------------------|---------------------|---------------------------|
| Nulliparas (P0) | | | | | | | | |
| Mean | 25.96 | 39.51 | 5.40 | 5.00 | 11.23 | 3.00 | 8.32 | 213.24 |
| Standard deviation | 4.26 | 1.39 | 1.84 | 3.17 | 4.29 | 0.44 | 0.87 | 56.74 |
| Median | 26.00 | 39.71 | 5.00 | 5.05 | 10.41 | 3.00 | 8.00 | 200.00 |
| Multiparas ($p \geq 1$) | | | | | | | | |
| Mean | 29.43 | 39.63 | 6.45 | 3.77 | 8.73 | 3.23 | 8.28 | 243.66 |
| Standard deviation | 3.66 | 1.49 | 2.06 | 2.88 | 4.17 | 0.54 | 0.93 | 307.51 |
| Median | 30.00 | 39.29 | 6.00 | 3.13 | 7.75 | 3.15 | 8.00 | 200.00 |
| Overall | | | | | | | | |
| Mean | 28.34 | 39.59 | 6.12 | 4.19 | 9.57 | 3.16 | 8.29 | 234.02 |
| Standard deviation | 4.17 | 1.46 | 2.05 | 3.03 | 4.37 | 0.52 | 0.91 | 256.26 |
| Median | 28.00 | 39.57 | 6.00 | 3.75 | 8.70 | 3.10 | 8.00 | 200.00 |

DISCUSSION

The passage of the fetus through the birth canal during labour can be unpredictable and hazardous. The understanding and management of labour have evolved at a rapid pace especially with the introduction of the partograph and active management of labour which have led to reduction in the incidence of prolonged labour (Olah and Neilson, 1994; Bohra *et al.*, 2003; Frigoletto *et al.*, 1995). The observed mean admission cervical dilatation for multiparas (6.45 cm) was more than for nulliparas (5.40 cm) and the mean admission-delivery time interval was shorter in multiparas (3.77 h) than in nulliparas (5.00 h). This is in keeping with findings of Duignan *et al.* (1975). However, due to late presentation of the parturients to the hospital, the suggested admission time as the starting point of labour by Hendricks *et al.* (1970) could not be adopted. Therefore, onset of regular uterine contractions was used as the starting point of labour in this study.

The overall average duration of labour was 9.57 h which is comparable to 9.7 h recorded at New Mexico, USA (Rogers *et al.*, 1977) but lower than 12.47 h recorded at Lagos, Nigeria (Agboola and Agobe, 1976). Multiparas had a significantly lower mean duration of labour (8.73 h) than nulliparas (11.23 h). This is consistent with findings by other researchers (Duignan *et al.*, 1975; Agboola and Agobe, 1976; Impey *et al.*, 2000). The difference between nulliparas and multiparas is likely due to better sensitivity of the multipara's uteri to both endogenous and exogenous oxytocin which results in early response and more intense uterine contractions with its attendant faster cervical dilatation and early delivery. This also contributed to the difference in the admission-delivery time interval experienced and not only the difference in admission cervical dilatation as observed by Duignan *et al.* (1975) in their study.

With active management of labour, the duration of labour is not expected to exceed 12 h (Bohra *et al.*, 2003; O'driscoll *et al.*, 1973). In this study, 73.1% of parturients delivered within this time range. This is comparable to 80% in Bergsjö *et al.* (1979) finding and 75% in Rogers *et al.* (1977) finding in New Mexico but <97.2% reported by Impey *et al.* (2000). This study shows that the higher the parity, the higher the birth weight and the shorter the duration of labour. However, birth weight and duration of pregnancy as independent variables have no effect on duration of labour; this is contrary to Nesheim (1988)'s finding in Norway where there was positive correlation between these factors and duration of labour (Olah and Neilson, 1994).

Controversy exists on the effect of active management of labour on the rate of caesarean section (Frigoletto *et al.*, 1995; Rogers *et al.*, 1977). (O'driscoll *et al.*, 1973) in Ireland showed a reduction in caesarean section rate. This is supported by Rogers *et al.* (1977) but the difference observed in the latter study was not statistically significant while Frigoletto *et al.* (1995) showed no reduction in caesarean section rate in Boston, USA. Recent study on the trend of caesarean section at this centre showed a rising caesarean section rate but the annual number of caesarean section hardly changed. This was attributed to decrease in uncomplicated labour cases presenting at the centre in recent times (Ijaiya and Aboyeji, 2001).

CONCLUSION

In this study, three-quarters of the patients delivered within 12 h of spontaneously initiating labour and labour is shorter in multiparas than nulliparas. The number of deliveries and maternal age were the only variables that influenced the duration of labour in the study.

REFERENCES

- Agboola, A. and J.T. Agobe, 1976. A reappraisal of the duration of labour. *Obstet. Gynecol.*, 48: 724-726.
- Albers, L.L. 1999. The duration of labour in healthy women. *J. Perinat.*, 19: 114-119.
- Bergsjö, P., L. Bakketeig and S.N. Eikhom, 1979. Duration of labour with spontaneous onset. *Acta Obstet. Gynaecol. Scand.*, 58: 129-134.
- Bohra, U., J. Donnelly, M.P. O'Connell, M.P. Geary, K. McQuillan and D.P. Keane, 2003. Active management of labour revisited: The first 1000 primiparous labour in 2000. *J. Obstet. Gynecol.*, 23: 118-120.
- Duignan, N.M., J.W.W. Studd and A. Hughes, 1975. The characteristics of labour in different racial groups. *Br. J. Obstet. Gynaecol.*, 82: 593-601.
- Frigoletto, F.D. Jr., E. Lieberman, J.M. Lang, A. Cohen, V. Brass, S. Ringer and S.A. Datta, 1995. Clinical trial of active management of labour. *N. Eng. J. Med.*, 333: 745-750.
- Hendricks, C.H., W.E. Brenner and G. Kraus, 1970. Normal cervical dilatation pattern in late pregnancy and labour. *Am. J. Obstet. Gynecol.*, 106: 1065-1082.
- Ijaiya, M.A. and A.P. Aboyeji, 2001. Caesarean delivery: The trend over a Ten-year period at Ilorin, Nigeria. *Nig. J. Surg. Res.*, 3: 11-18.

- Ijaiya, M.A., A.P. Aboyeji, O.O. Fakeye, O.R. Balogun, D.C. Nwachukwu and M.O. Abiodun, 2009. Pattern of cervical dilatation among parturients in Ilorin, Nigeria. *Ann. Afr. Med.*, 8: 181-184.
- Impey, L., J. Hobson and C. O'herlihy, 2000. Graphic analysis of actively managed labour: Prospective computation of labour progress in 500 consecutive nulliparous women in spontaneous labour at term. *Am. J. Obstet. Gynecol.*, 183: 438-443.
- Melah, G.S., A.U. El-Nafaty, A.A. Massa and B.M. Audu, 2003. Obstructed labour: A public health problem in Gombe, Gombe state, Nigeria. *J. Obstet. Gynaecol.*, 23: 369-373.
- Nesheim, B., 1988. Duration of labour: An analysis of influencing factors. *Acta Obstet. Gynecol. Scand.*, 67: 121-124.
- Olah, S.J. and J.P. Neilson, 1994. Failure to progress in the management of labour. *Br. J. Obstet. Gynaecol.*, 101: 1-3.
- O'driscoll, K., J.M. Stronge and M. Minogue, 1973. Active management of labour. *Br. Med. J.*, 3: 135-137.
- Rogers, R., G.J. Gilson, A.C. Miller, L.E. Izquierdo, L.B. Curet and C.R. Qualls, 1977. Active management of labour: Does it make a difference? *Am. J. Obstet. Gynecol.*, 177: 599-605.