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Induction of Labour by Vaginal Misoprostol for Intrauterine Fetal Death

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OBJECTIVE - To review our four year experience in induction of labor in cases of intrauterine fetal death (IUFD) using misoprostol. **METHODS** - A descriptive study of 37 women with IUFD after 28 weeks who had induction of labor with vaginal misoprostol at the obstetric unit of our multidisplinary hospital. **RESULTS** - All the patients were delivered vaginally. Misoprostol dose ranging from 100 to 400 µg with a mean of 224.3 ± 103.8 µg was used to achieve labor. Majority (64.8%) of the patients required a total dose of 200 µg or less to achieve labor. The dose required to achieve labor was found to decrease with increasing gestation; 112.5 µg at 36 weeks and above and 350 µg at between 28 and 30 weeks. The induction delivery interval (IDI) varied from 4 hours 31minutes to 40 hours with a mean of 14 hours 18 minutes ± 5 hours 3 minutes. The IDI was also found to be dependent on gestational age. Of the 28 (75.7%) that delivered within 24th hour, 16 (57.1%) were at least 32 weeks. Seven women required augmentation. The commonest complication was postpartum hemorrhage in three patients. **CONCLUSION** - The results of this study confirm that misoprostol is an effective induction agent in IUFD.

Key words : induction of labour, intrauterine fetal death, misoprostol

Introduction

Intrauterine fetal death (IUFD) is a common problem in obstetric practice[1,2,3]. It may be complicated by psychological problems, infection, and consumptive coagulopathy[1,3]. For the obstetrician confronted with IUFD especially in the presence of a unfavourable cervix, it poses a major challenge[1-5] . The introduction of prostaglandins into obstetric practice has solved this constraint in economically advantaged countries. In low resource setting, the cost, transportation and special storage requirements of prostaglandins make it unavailable[6].

Misoprostol (Cytotec, Searle Pharmaceuticals, Chicago, IL.) a prostaglandin E_1 analogue used for the treatment of drug induced gastric ulcer, has been found to be effective and safe in induction of labour[3,6]. Its safety, cost, effectiveness and ease of administration make it ideal for low resource settings like ours[6].

We introduced misoprostol into our practice in 1999 and have found it very useful especially in IUFD. We report our experience with misoprostol in the induction of labor in pregnancy complicated by IUFD.

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Material and Methods

This study was conducted at the obstetric unit of our multidisciplinary proprietary hospital in the foremost economic capital of Nigeria, Lagos.

All patients with IUFD after 28 weeks of pregnancy who had induction of labour with misoprostol over a period of 4 years (September 1999 to August 2003) were recruited into the study. In all cases IUFD was confirmed with ultrasonography. An informed consent and ethical clearance were obtained. Excluded from misoprostol induction of labor in our practice even in the presence of IUFD were cases of: previous uterine surgery, placenta praevia, abnormal lie, multiple pregnancy, parity of 5 and above and known contraindication to the use of prostaglandins. Induction was commenced in the morning (08.00 hours). Prior to insertion of misoprostol the patient was asked to empty her bladder and avoid getting up from the bed for at least 2 hours after insertion of the tablet. A sanitary pad was applied to ensure that the inserted tablet did not fall off unnoticed. One hundred micrograms of misoprostol was inserted into the posterior fornix and repeated 12 hourly until contractions ensued. The 100 µgm dose was prepared by halving 200 µgm tablet of misoprostol with a pill cutter. The patient was transferred to the labor ward when labor ensued (having at least one contraction in 10 minutes lasting 20 seconds). Labor was monitored using the WHO partograph (WHO 1994). Labor complications were managed according to our departmental protocol.

Table I. Causes of IUFD Among the Patients

Cause of IUFD	Number (Percentage)
Hypertensive disorder of pregnancy	8 (21.6%)
Uncontrolled diabetes mellitus	6 (16.2%)
Chorioammonitis	5 (13.5%)
Abruptio placentae	2 (5.4%)
HIV/AIDS	2 (5.4%)
Sickle cell	1 (2.7%)
Placental insufficiency	4 (10.8%)
Cord accident	4 (10.8%)
Unidentified	5 (13.5%)

Table II. Relationship Between Doseage Requirement and Gestational Age

Gestational age (Weeks)	Dosage range (micrograms)	Model dose	Median dose	Mean dosage (micrograms)
28 - 30	200 - 400	400	400	350.0 ± 75.6
31 - 33	100 - 400	300	300	287.5 ± 99.1
34 - 36	100 - 300	200	200	200 ± 92.6
> 36	100 - 200	100	100	112.5 ± 35.4

Results

During the study period, 37 women with IUFD after 28 weeks had induction of labor with vaginal misoprostol in our center. The age of the women ranged from 19 to 42 years with a mean of 27.1 ± 6.4 years. The modal gestational age was 31weeks. Majority of the women were multiparas(78.4%), with only 8(21.6%) nulliparas. Twenty seven (73.0%) women were unbooked and 10(27.0%) were booked for delivery. The causes of IUFD are shown in Table I.

All the women had successful induction of labor, requiring misoprostol dose ranging from 100 to 400 µgm with a mean of 224.3 ± 103.8 µgm. While 14 (37.8%) women required 200 µgm to establish labor, 10 (27.0%), 7(18.9%) and 6 (16.2%) required 100, 300, 400µgm respectively. The modal and median doses are given in Table II which also shows the relationship between gestational age at induction and the dose of misoprostol required to establish labor. The mean dose required to achieve established labor was found to decrease with increasing gestation. While the mean dose of misoprostol required to achieve established labor in pregnancies above 36 weeks was 112.5 µgm, that at gestational age of 28 to 30 weeks was 350.0 µgm.

The induction delivery interval varied from 4 hours 31 minutes to 40 hours with a mean of 14 hours 18 minutes ± 5 hours 3 minutes. Of the 37 women that had misoprostol induction of labour, 16 (43.2%) delivered after 12 hours in labour but within the 24th hour, 12 (32.4%) delivered within the 12th hour and 9 (24.3%) delivered after 24th hour. The induction delivery interval was also found to be dependent on the gestational age at induction. Of the 28 (75.7%) that delivered within 24th hour, 16 (57.1%) were at least 32 weeks . All the women that delivered after 24th hour were of gestational age less than 32 weeks.

Seven (18.9%) women required augmentation with oxytocin for inefficient uterine contraction. Twenty one (56.8%) women required analgesia during labour. In five (13.5%) women complications like postpartum haemorrhage in three, retained placenta in two, temperature greater than 37.5^{0}C in one and vomiting in one occurred.

Discussion

The occurrence of IUFD constitutes a major nightmare to women and attending clinicians[1,2]. It is even more agonizing, with a feeling of defeat to the clinician if it occurs unexpectedly and the cause cannot be explained[1]. Therefore, the ideal drug for the termination of pregnancy in cases of IUFD should not only be effective and safe, but should be affordable to avoid additional financial burden arising from a wasted pregnancy.

Before the introduction of misoprostol, use of oxytocin for induction of labour in IUFD was often difficult and frustrating[3,4].

Our experience shows that misoprostol is a very effective and safe method of induction in IUFD, with 100% vaginal delivery rate and few complications. Its stability at room temperature, need for no special storage requirement and cost effectiveness make it an ideal method of induction in both developing and developed countries. The result of this study is similar to the findings in other reports[3-5].

Based on the results of this study we consider misoprostol an effective and safe drug, with acceptable side effect profile.

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