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MISUSE OF MISOPROSTOL BY A BIRTH ATTENDANT AND IMPLICATIONS FOR COMMUNITY DISTRIBUTION OF MISOPROSTOL

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ABSTRACT

Background: Despite calls for advance community distribution of Misoprostol, World Health Organization is cautious about recommending this. This report highlights complications of Misoprostol use by community birth attendants, discusses implications of advance distribution and possible solutions.

Case Report: Labour induced in a woman attending a facility run by a nurse using high dose (300mcg) misoprostol and another drug resulted in her infant developing severe birth asphyxia immediately after delivery.

Conclusion: Misuse of Misoprostol leads to complications. Research into community usage, confidential enquiries, development of guidelines and training of birth attendants is needed. Production of low dose Misoprostol (25mcg) should be encouraged.

Keywords: MISOPROSTOL, BIRTH ASPHYXIA, ADVANCE COMMUNITY DISTRIBUTION, NIGERIA, BIRTH ATTENDANT

INTRODUCTION

In January 2006, Nigeria became the first country in the world to register misoprostol for the prevention and treatment of Postpartum Haemorrhage (PPH) which is a major cause of maternal mortality worldwide[1,2]. This followed studies in several countries which showed that community birth attendants and even birthing women themselves can administer misoprostol safely and reduce the incidence and severity of PPH[3-6]. Misoprostol is cheap, heat stable, with a long shelf life and can be administered orally, vaginally, sublingually, or rectally[7]. Thus various world authorities e.g. the World Health Organization (WHO), the International Federation of Obstetrics and Gynaecology (FIGO) and the International Confederation of Midwives (ICM) have recommended its use by birth attendants who may not have the required skills or resources to manage serious bleeding[8,9].

Some workers have also advocated for routine distribution of misoprostol to birth attendants and pregnant women in the community before delivery[10,11]. (Potts et al in a commentary in the Lancet argued that this practice (known as advance provision of misoprostol) could lead to fewer maternal deaths, improvement in maternal health and the achievement of Millennium Development Goal 5[9]. However WHO is cautious about recommending advance distribution because of the possibility of harmful effects even though Misoprostol is included in its Model List of Essential Medicines for use in PPH and incomplete abortion[12,13]. Misoprostol is a synthetic prostaglandin E analogue which was originally developed for the treatment of peptic ulcer disease but because it causes myometrial contractions it has also been used for cervical ripening and induction of labour[7]. The following case report highlights a complication of use of misoprostol in the community, discusses the implications of community distribution and offers possible solutions.

CASE REPORT

A male infant was rushed to a private hospital with a history of recurrent convulsions and failure to cry or suck since birth. He had been delivered 24 hours earlier to a Para 2+0, 31year old woman at a facility run by a nurse. (The baby's mother stated that she had

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delivered twice vaginally in the same facility - her first child weighing 4.5kg at birth).

During the index patient's pregnancy, the mother had received antennal care at the same maternity home and had reportedly had an uneventful pregnancy. However she was induced because she was past her date of delivery using tablets which she identified as misoprostol 200mcg. One tablet of Misoprostol was broken into two, and half (100mcg) inserted vaginally, while the other half (100mcg) had been given to her sublingually. After an hour another 100 mcg was inserted vaginally because contractions had not yet commenced. Shortly after, she started contracting but a "hot drip" (name unknown) was added because her contractions were weak. She then developed strong contractions and delivered vaginally a few hours later. She stated that the baby turned black immediately after birth and did not cry even when resuscitated with oxygen and given antibiotics. He was kept in the maternity home until he started convulsing at which point he was referred.

The child was found to be dyspnoeic, peripherally cyanosed with normal facies and a weight of 3.5kg. He was afebrile, not pale, and anicteric. Gestational age was assessed to be 40±2 weeks. He had a patent, non-bulging anterior fontanelle. A diagnosis of severe birth asphyxia was made and he was admitted for intensive care. Transfontanelle ultrasound showed no structural abnormality and no intracerebral haemorrhage. Blood sugar was normal, HIV antibodies were non-reactive and VDRL negative. Apart from a relative neutrophilia and a mild increase in urea level, his other investigations were normal apart. His condition eventually improved and he was discharged after three weeks. When last seen at the age of 4 weeks, his convulsions had ceased and he was able to cry and suck a little but his weight had dropped to 3.1kg. His parents were counselled about the possibility of neurological damage and the need for regular follow up.

DISCUSSION

The patient described in this report developed severe birth asphyxia following induction of labour by a private birth attendant in the community who used high doses of Misoprostol in combination with another drug that also enhanced uterine contractility and led to hypertonic uterine action. WHO and other authorities recommend low doses of Misoprostol be used for induction (e.g. 25mcg Misoprostol every 2 hours or 50mcg every 4 hours till labour is established)[14]. If another uterotonic is needed, it should not be given till six hours after the last dose of Misoprostol is administered. Thus Misoprostol was used inappropriately. When administered sublingually, Misoprostol is quickly absorbed into the blood stream and continues to act for at least 2 hours. Absorption is slower when given vaginally. Maximum plasma levels are not reached till 70 to 80 minutes later but the drug is still detectable in the plasma after 6 hours[7]. It is likely that in the patient's mother, the maximal effect of Misoprostol did not occur till when the drip was started probably leading to a combined effect of two uterotonics. The effect of high doses of uterotonics results in hyperstimulation of the uterus, interruption of oxygen delivery to the foetus and resultant intrapartum asphyxia.

The qualifications and training of the birth attendant could not be ascertained. Very often informal health workers who have no orthodox medical training are referred to as "doctors" or "nurses" by their clients. But there are facilities which are run by qualified nurses and midwives and which are supposed to be supervised by a doctor[15]. The contents of the "hot drip" could also not be determined though it obviously contained a substance that increased uterine contraction, possibly oxytocin.

The mother of the child in this report was a multiparous woman. Misoprostol has been used for induction in grand multipara but strict vigilance and close monitoring of both mother and foetus during labour is necessary[14]. Complications of use include uterine hyperstimulation, ruptured uterus, foetal tachycardia, birth asphyxia and neonatal death[16-22]. These occur more commonly when higher doses are used[16-22]. A survey of doctors in Nigeria who have used Misoprostol revealed that most of them believed it to be as effective as oxytocin but stated that maternal and foetal side effects were common[18]. The incidence of neonatal asphyxia (where reported) ranged between 2.5%and 12.3%[17-22]. Unfortunately there are no statistics about the use of Misoprostol for induction by informal health providers (i.e. nurses, traditional and other birth attendants). Yet these birth attendants provide the majority of care for women in Nigeria and other resource constrained settings. This report shows that they do use Misoprostol but details about usage in most cases are unknown.

Introducing widespread community distribution of Misoprostol (in a standard dose of 600mcg for PPH) could lead to inadvertent use before delivery and increase the frequency of neonatal asphyxia, stillbirth and the risks associated with twin delivery[11]. Further there may be confusion about

doses to be used in induction with catastrophic results as shown in this report. The recent introduction into the market of Misoprostol 25 mcg tablets may make this confusion worse because the colour, size, shape and packaging of the low dose formulation is almost identical to that of the commonly available 200mcg formulation. Further as the price difference between the two formulations is small, untrained birth attendants might prefer to buy the 200 mcg tablets in order to "obtain better value for money" and then use the higher formulation for induction. This potential for misuse is one reason why WHO is cautious about advocating for community distribution of Misoprostol[12]. However Misoprostol is readily available without prescription though it is registered as a prescription only drug[1]. It is likely that eventually it will be widely used in the community. There is thus an urgent need to train birth attendants not only in the public and formal health sector but also in the private and informal sectors. They need to be aware of the contraindications to use of Misoprostol. For example it is contraindicated in women who have had previous caesarean delivery (and there are many in the community) because it is associated with a higher frequency of uterine rupture[14]. This report shows that Birth attendants also need to be able identify those neonates that need early referral for specialist care.

It is recommended that the Society for Gynaecology and Obstetrics (SOGON) in conjunction with the Federal Ministry of Health, National Association of Nigerian Nurses and Midwives (NANNM) should develop guidelines for the use of Misoprostol in different levels of healthcare. Training should be followed by research into the effect on health provider performance, maternal and neonatal outcomes as performance change is not always automatic and new interventions may need to be developed[23]. Research is also needed to determine the benefits and the problems associated with widespread community distribution of Misoprostol. Doctors who see neonates with birth asphyxia should routinely ask about use of Misoprostol in their mothers. Efforts should also be made to set up "no blame" confidential enquiries into birth asphyxia in orthodox health facilities and in communities as is done in some countries[24]. Hopefully these will translate into improved training programs and better allocation of resources for health care.

In conclusion there is need for development of clinical guidelines, training of health providers, research at community and facility level, and production of low dose Misoprostol formulations which can be clearly identified. This would help ensure safe and effective use of this promising drug.

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