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NON-ACCIDENTAL ERGOMETRINE ADMINISTRATION TO A POST-CIRCUMCISION BLEEDING NEONATE: A CASE REPORT
Clifford Onyema, Department of Paediatrics and Child Health, College of Medicine, Afe Babalola University, Ado Ekiti and Federal Teaching Hospital, Ido-Ekiti, Nigeria. Olufunke Bolaji, Department of Paediatrics and Child Health, College of Medicine, Afe Babalola University, Ado Ekiti and Federal Teaching Hospital, Ido-Ekiti, Nigeria. Julia Okolugbo, Department of Paediatrics, Federal Teaching Hospital, Ido-Ekiti, Nigeria. Olusegun Adebami, Department of Paediatrics and Child Health, College of Health Sciences, Ladoke Akintola University of Technology, Osogbo, Osun State, Nigeria.

Corresponding Author: Prof. Olusegun J. Adebami, Department of Paediatrics and Child Health, College of Health Sciences, Ladoke, Akintola University of Technology, Osogbo, Osun State, Nigeria, email, ojadebami@lautech.edu.ng

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C. Onyema, O. Bolaji, J. Okolugbo and O. Adebami

ABSTRACT

Ergometrine, is a widely used drug in the management of the third stage of labour to control postpartum haemorrhage. Few cases of ergometrine toxicity had earlier been documented when accidentally administered into neonates instead of Vitamin K but no case of non-accidental ergometrine administration has been reported. We present case of a 19 day old term male neonate who presented to peripheral hospital with unconsciousness and shallow respiratory efforts of thirty minutes duration. The patient had intramuscular ergometrine administered to him with the aim of stopping post circumcision bleeding. The challenges in management and lesson learnt are hereby presented.

INTRODUCTION

Ergometrine also known as Ergonovine is one of the ergot alkaloids used to control postpartum haemorrhage during the third stage of labour.[1] The main clinical use of ergometrine is in the production of rhythmic contractions of the uterus, after the delivery of the placenta for the purpose of contracting the uterus in order to prevent postpartum haemorrhage and post-abortion haemorrhage due to uterine atony.[2] Ergometrine however, has other multi-systemic toxic side effects including central nervous system (encephalopathy, seizures), cardiovascular, respiratory and musculoskeletal effects. [2] Noxious effects of ergometrine in the newborn have been reported from as early as the 19th century when the features of perinatal asphyxia seen in some newborns were attributed to hypertonic contractions of the uterus and transplacental transfer of ergometrine.[3] Also, cases of inadvertent administration of ergonovine instead of parenteral Vitamin K

have been documented.[4,5] However, to the best of the knowledge of the authors, non-accidental administration of ergometrine to a newborn is yet to be reported. Ergometrine was administered in this case to manage post circumcision bleeding.

Post circumcision bleeding is one of the major complications of genital circumcision. The severity can vary from mild to major bleeding requiring suturing of the bleeding vessel particularly if the procedure is undertaken by inexperienced providers of the procedure.[6] The frequency when Plastibel is used is about 10-30%.[7,8] The frequency of bleeding when old traditional method is used is probably unknown and many of them may be unreported. Bleeding usually arises from the frenulum. However, Vitamin K deficiency also has been found to aggravate post circumcision bleeding in infants.[9] The management of post-circumcision bleeding include external compression of frenulum to secure haemostasis, compression of frenulum vessel with gauze when plastibel is used,[10] resuscitation and correction of anaemia with blood transfusion (if severe), [9] and Vitamin K1 administration for infants who had no prior Vitamin K1 administration at birth. [9] Usually, no other medication is necessary unless specific clotting factor deficiency is suspected in cases of haemorrhagic disorders. Ergometrine has no role in the management of post-circumcision bleeding and is very toxic to newborns.

CASE REPORT

A 19 day old term male neonate presented at a general hospital with unconsciousness and shallow respiratory efforts of 30 minutes duration. The general hospital is manned by a junior and a senior resident doctor in Paediatrics on community posting at a Secondary Health Care (SHC) facility and was being supervised by a Consultant Paediatrician. The patient was referred to the SHC from a faith-based delivery home where the child was born and had circumcision done on the day of presentation. The baby was taken back to the delivery home with a 7 hour history of bleeding from the circumcision site. Ergometrine was administered with the aim of stopping the post-circumcision bleeding. The dose of ergometrine administered could not be ascertained. The quantity of blood loss was unknown, but two packs of gauze had been soaked and two blood stained diapers had been changed prior to presentation. Even though the bleeding was said to have apparently stopped, the baby became restless with progressive worsening respiration and unconsciousness. Pregnancy and delivery were uneventful. Birth weight was unknown. He had no asphyxia and was sucking well. He was not given Vitamin K1 at birth. He had received BCG, OPV0, HBV1 vaccines. No previous history of abnormal bleeding after immunization and no family history of bleeding disorders. He is 1st child in the family and had been clinically well prior to the procedure and eventual ergometrine administration.

At presentation, he was unconscious with severe pallor, having cold extremities, bradypnoea with shallow respiratory efforts. The central and peripheral pulses were not palpable, and the heart sounds were barely audible. The weight was 3.5 kg. SPO_2 was unrecordably low. Examination of the genitals showed a fresh but poorly circumcised phallus male with dressing soaked with clotted blood. There was, however, no active bleeding from the circumcised site. A diagnosis of a newborn in hypovolaemic shock secondary to severe post circumcision haemorrhage and Ergometrine toxicity was made. Packed Cell Volume was 31% (normal for age 46+/- 5)

(Haemoglobin of 10.1g/dl). There was no facility for arterial blood gas estimation.

Cardiopulmonary resuscitation was commenced by Intermittent Positive Pressure ventilation and coordinated cardiac compression. Intranasal oxygen was administered. Intravenous 20ml/kg of 0.9% Saline was also administered. Initial post resuscitative vital signs were: temperature: 34^0C, respiratory rate: 27cpm, and Heart rate of 110 bpm. He was urgently transfused with whole blood transfusion at 20ml/kg, Intravenous Vitamin K1 2mg stat administered and warmth was provided. He was continued on intravenous fluid at maintenance and put on antibiotics. Despite blood transfusion and other resuscitative measures, patient's condition was deteriorating with persistent low SPO2, poor peripheral perfusion, progressive deteriorating respiratory efforts and heart rate until temperature was no longer recordable despite the warmth. He developed apnoea and all efforts at cardiopulmonary resuscitation within the limits of available facilities were unsuccessful. He was certified dead three and a half hours after admission. Facilities were not available for mechanical ventilator support. Postmortem was not done.

DISCUSSION

The present case typified one of the common complications of male circumcision which is haemorrhage. However, what made the present case unusual and probably complicated was the non-accidental parenteral ergometrine administration to the baby to control the haemorrhage. Many factors could be inferred as the causes why the baby presented unconscious and in shock which may also have caused the poor outcome in the patient. Baby had severe haemorrhage which on its own could have led to hypovolaemic shock and was also given parenteral ergometrine resulting in ergometrine toxicity.

Patient had severe haemorrhage and presented in shock. The bleeding might have been related to Vitamin K deficiency.[9] Even though initial haematocrit before the bleeding was unknown, he presented with haemoglobin concentration of 10.1g/dl. This level of haemoglobin may probably not have accounted for the severity of shock and unconsciousness. With blood transfusion, patient was hoped to show recovery from the anaemia with improved clinical state. But this was not the case.

The non accidental administration of parenteral ergomentrine to the baby is quite unusual. In this case, the ergometrine was administered out of ignorance by a poorly trained personnel. The rationale of the personnel who administered the ergotamine to the neonate was that since ergotamine stopped haemorrhage in mothers with postpartum haemorrhage, it could be used stop bleeding in a neonate as well. This error of judgment, however, may have proved fatal for the neonate. Neonatal Ergometrine toxicity is a rare event in the developed countries; the few cases reported were due to inadvertent administration of the drug in place of neonatal Vitamin K to the newborn to prevent haemorrhagic disease of the newborn.[11-14]

The clinical presentation of the baby was similar to ergometrine toxicity. Ergotamine toxicity in the newborn typically presents with central nervous system and respiratory depression, cyanosis, pallor, oliguria and hypoxaemia,[2,15] Without treatment, worsening of symptoms generally ensues culminating in death from respiratory failure within 6 hours of administration of ergometrine.[15] Management of neonatal ergotamine toxicity is generally supportive with oxygen administration; respiratory failure, cyanosis, acute kidney injury tends to improve with sodium

nitroprusside as antidotal therapy. Naloxone, if administered as soon as possible thereafter has also been shown to mitigate the respiratory depression.[16] Neither sodium nitroprusside nor Naloxone was available in the SHC.

Circumcision is known to be relatively safe procedure with a low rate of complication which ranges from 0.19% to 3.1%.[17] The majority of complications are minor and treatable.[18] Fatality in male circumcision have been reported by many authors.[17,18] Fatality has been attributed to many factors like severe haemorrhage especially in haemorrahagic disorders, cardiac arrest following general anaesthesia, hypersensitivity reactions to local anaesthesia, secondary infections like associated respiratory tract infections especially pneumonia, sepsis, tetanus.[19] Atiker *et al*[20] reported bleeding as the most frequently encountered complication after circumcision. Hedjazi et al also reported three cases of postoperative bleeding leading to death.[19] The fatality in the present case could not be attributed to haemorrage alone but also the parenteral ergometrine administration.

The present case was circumcised by traditional birth attendant; however, cases of fatality have been documented when doctors did the circumcision. Hedjazi[19] reviewed 38 cases of circumcision related mortality and found more cases of fatality when babies were circumcised by doctors while Horowitz et al [20] reported more fatalities with paramedical persons and traditional circumcisers. However, the bleeding that arose from the circumcision might have been well managed in the present case if ergometrine toxicity was not associated.

That the attendant could give ergometrine to control bleeding in newborn may have arisen from frustration on what to do to control the bleeding, but it clearly shows ignorance and poor skill development. Neonatal transport services are virtually non-existent in most health care settings in the country else the baby might have been transferred to a tertiary health care centre for prompt management.

The present case is a complication of circumcision and effect of non-accidental administration of ergometrine therefore efforts at training and retraining of all health care personnel on the strict indications and uses of drugs at different levels of health care especially at primary level of care on simple management of bleeding in newborn is very essential to prevent reoccurrences.

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