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Original Research Article

AN AUTOPSY STUDY OF COMMON CAUSES OF FIFTY-THREE NEONATAL DEATHS IN CALABAR, SOUTH-SOUTH ZONE OF NIGERIA

Abstract

Background: Neonatal deaths are deaths of live born babies occurring before 28 completed days. The vast majority occur in low-income countries like Nigeria with a high neonatal mortality rate. There is paucity of autopsy studies due to refusal of family to give consent for such procedures.

Aim: To identify the commonest causes of neonatal death in 53 neonatal autopsies in Calabar, Nigeria.

Material and Methods: A.What does it mean? detailed postmortem was carried out using lettules techniques and bits taken for histological analysis to ascertain the cause of death. Other relevant contributory factors such as the gestational age, mode of delivery, place of birth,What do you want to express this idea?antemortem cause of deaths and maternal obstetric history were obtained from the medical records and autopsy request forms

Results: In the one-year retrospective study of 53 neonatal autopsies, male: female ratio was 1: 0.83 and mean age at death was 6.5 + 7.3 days, ranging from 1 to 28 days.There is no reason to show these results if they are not variables expressed in the method. The commonest cause of neonatal death was severe birth asphyxia seen in 10 cases (18.9%), followed by kernicterus in 6 cases(11.3%), birth trauma seen in 6 cases(11.3%), congenital heart disease seen in 5 cases(9.4%), and prematurity seen in 5 cases(9.4%).

Conclusion: The study confirms the usefulness of neonatal autopsy in ascertaining the definitive cause of death. This is not a conclusion of your work, it is not an objective. Utility is not studied, this would be another article.Severe birth Asphyxia was identified as the commonest cause of death in the neonatal period followed by birth trauma, kernicterus and congenital heart diseases.

Key Words: Neonatal Death, Neonatal Autopsy, Cause of Death, Severe birth Asphyxia

1.Introduction

Neonatal period is defined as the time between birth and 28days of life. It is a highly vulnerable period of life when a neonate may develop certain serious problems which may lead to death (1).

Early neonatal deaths are deaths of live born babies during the first seven completed days after birth, and late neonatal deaths occur after 7 completed days and before 28 completed days. The vast majority of neonatal deaths occur in the low-income countries where standards of both maternal and newborn care are low and of the approximately 130 million infants born worldwide each year, it is estimated that four million infants die during the first month of life (2,3,4). Children who die within the first 28 days of birth suffer from conditions and diseases associated with lack of quality care at birth or skilled care and treatment immediately after birth and in the first days of life (WHO).Nigeria as of 2019 fall within the first 10 countries with the highest number of newborn deaths.You must include this referenceThe first step in improving early neonatal survival is to identify the common causes and look for modifiable factors and develop policies such as quality neonatal care that is easily available and affordable to the common man within the geopolitical zone. Empowerment and training of community health workers and traditional birth attendants at the community level will help in the reduction of maternal and neonatal mortality.However, few developing countries have vital registration systems that are complete enough to provide accurate estimates of neonatal mortality, or of its early and late components (5,6).State here the objective of the work.

2.Materials and Method

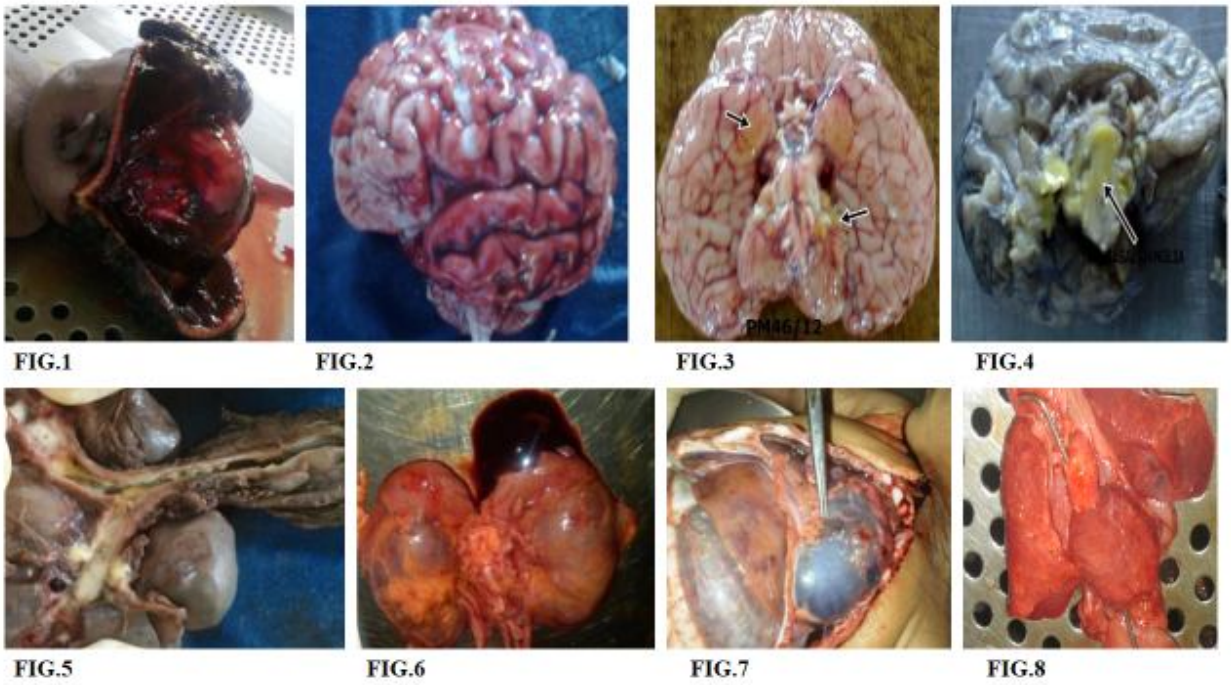
A retrospective study of 53 neonatal autopsies conducted in the Department of Pathology, University of Calabar Teaching Hospital within a period of a year. Detailed postmortem was carried out using lettules techniques and bits taken for histological analysis to ascertain the cause of death. Other relevant contributory factors such as the gestational age, mode of delivery, place of birth, antemortem cause of deaths and maternal obstetric history were obtained from the medical records and autopsy request forms.Why were these data taken if they are not shown in this study?The data obtained was transferred into SPSS version 21.0 and statistical analysis carried out. Ethical approval was obtained from UCTH Ethical Committee.

3. Results

In the one-year retrospective study of 53 neonatal autopsies, male : female ratio was 1: 0.83 and mean age at death was 6.5 + 7.3 days, ranging from 1 to 28 days, with a little less than one-fifth (10) i.e. 18.9% dying within 24 hours and one-half (26)this reference does not appear in the referencesi.e. 49.1%, dying within 2-7 days of life, respectively. The commonest cause of neonatal death was severe birth asphyxia seen in 10 cases (18.9%), followed by kernicterus in 6 cases(11.3%), birth trauma seen in 6 cases(11.3%), congenital heart disease seen in 5 cases(9.4%), and prematurity seen in 5 cases(9.4%). As shown in table 1 below.

Table 1: Causes of Neonatal Death in UCTH (N=53)

Cause of Death	Frequency (n)	Percentage (%)
Severe Birth Asphyxia	10	18.9
Kernicterus	6	11.3
Birth Trauma	6	11.3
Prematurity	5	9.4
Congenital Heart Disease	5	9.4
Intracranial Haemorrhage	4	7.5
Meconium Aspiration Syndrome	3	5.7
ARDS	2	3.8
Pulmonary Haemorrhage	2	3.8
Neonatal Sepsis	2	3.8
Bronchopneumonia	1	1.9
Congestive Cardiac Failure	1	1.9
Aspiration Pneumonitis	1	1.9
Multicystic Kidney Disease	1	1.9
Severe Anaemia	1	1.9
Necrotising Enterocolitis	1	1.9
Neonatal Tetanus	1	1.9
Posterior Urethral Valve	1	1.9
Total	53	100



FIGURES (1-6): Photographs showing some common causes of Neonatal death in the study. Figure 1 (massive subgalel hematoma), Figure 2(Subarachnoid hemorrhage), Figure 3&4 (Kernecterus), Figure 5(Aspiration Pneumonitis), Figure 6(Adrenal hemorrhages) and Figure 7(Disseminated intravascular coagulopathy) and Figure 8(Congenital Heart defects).

Discussion

The causes of death in the neonatal period in developing world are poorly measured, argue this criterionthough major components are believed to be birth asphyxia, severe neonatal infections, complications of prematurity and neonatal tetanus (6,7,8).This bibliography does not appear in the references.In this study of 53 neonatal autopsies, the commonest cause of neonatal death was also severe birth asphyxia (10, 18.9%), followed by kernicterus (6, 11.3%), birth trauma (6, 11.3%), congenital heart disease (5, 9.4%), prematurity (5, 9.4%), Neonatal sepsis and Bronchopneumonia(3,5.7%) and Neonatal Tetanus(1,1.9%) (Table 1). These is in variance to earlier study carried in Calabar by Udoma and Udo in 2001 in which they reported that the major causes of morbidity were septicaemia in 35.9 percent, neonatal jaundice in 19 percent, tetanus in 13 percent and birth asphyxia in 10.9 percent.Their findings were based on antemortem findings rather than postmortem examination. Autopsy studies reveal that misdiagnosis is a relatively common occurrence, even where the diagnosis has been established by sophisticated modern investigative technologies (9). Foetal autopsy is able to provide a definite final diagnosis in 59%(122/206) of cases and this confirms the utility of foetal autopsy in identifying the cause of foetal loss, which will help in the genetic counseling of the couple (10). Asphyxia-specific early neonatal death is defined as death of foetus born at or after 35 completed weeks of gestation or weighing more than 2000g within first 7 days of life if asphyxia is assigned as primary cause of death by the attending neonatologist (11). Hospital based studies in Nepal and south Africa estimated that birth asphyxia accounted for 24% and 14% of perinatal mortality respectively

(12,13). The incidence and mortality associated with severe birth asphyxia in Ilesha, Nigeria remained significantly high over a period of ten years despite changes in social order. The incidence of severe birth asphyxia was 93.7/1000 admissions for the 1994 to 1998 period and 100.2/1000 admissions for the 1999 to 2003 period(14).

In Osogbo, Adebani et al, in 2010 reported that out of 59 babies with seizures, 37(62.7%) were considered to have had birth asphyxia. Babies with seizures and asphyxia had the highest risk of death 59.5% and 48.8% respectively (15). In Lagos, Ekure et al, in 2004 performed autopsy on 115 of the 573 perinatal deaths and reported that 38.7 percent were due to asphyxia conditions and 8.9 percent were attributed to conditions associated with immaturity(16).Mukhtar et al, 2007 reported that birth asphyxia accounted for the highest number of presentations at 27%, with sepsis at 25.3% and Prematurity at 16%. While findings of neonate dying from severe birth asphyxia were mainly intense venous congestion and cyanosis with pronounced lividity, Pulmonary congestion and oedema and Fluidity of the blood. These deliveries were conducted by untrained birth attendant at home and churches with late presentation at the University of Calabar Teaching Hospital, Calabar resulting in prolonged labour. Three out of five were un-booked and two booked in the general hospital Calabar. The two booked were offered caesarean section due to postdatism and contracted pelvis but declined. Their gestational age ranged from 40weeks to 43weeeks. Two out of the five neonates delivered through spontaneous vertex delivery were found dead the next day at the labour ward with massive cephalhaematoma, pulmonary haemorrhage and haemoperioneum. Most deaths on the first day of live were the result of birth asphyxia,birth injury, or complications of preterm delivery. Birth asphyxia or injury(31%) and Preterm(26%) were the most common causes of death on day zero. On day 1 and during the first week of life, the proportion of deaths caused by birth asphyxia or injury was lower than on day 0(<14%) and on days 1-6, the frequent causes of death were preterm birth(30%) and sepsis or pneumonia(25%)(17,18,19).This bibliography does not appear in the references.

Birth trauma and kernicterus were the second commonest cause of neonatal death from our study (Fig. 3&4). The high cost of obstetric care, ignorance and unwholesome traditional belief by the uneducated and few educated women is an important factor leading to the patronage of traditional birth attendant that are mostly illiterate and without the basic skill in obstetric care.The resultant effect is poor obstetric outcome with babies presenting with Asphyxia due to prolonge obstetric care, massive cephahematoma as shown in (Fig.1) and subarachnoid haemorrhages (Fig. 2). Although the federal ministry of health through health ministry and public health physician have taken initiative to educate and trained such high-risk women in the identification of birth challenges and the need for antenatal care with the aim of reducing neonatal mortality. The study revealed five cases of congenital heart disease, which were missed clinically misdiagnosed.None of the neonates had advanced imaging studies such as CT scan, MRI carried out to aid diagnosis due to unavailability of such investigations in our facility and cost implication.The commonest anatomical cardiac findings were large ASD, isolated large ventricular septa defect, univentricular heart chamber, pulmonary stenosis and transposition of the great arteries. The commonest isolated CHD in Nigeria is ventricular septal defect (VSD) which constitutes 27% of the cases followed by patent ductus arteriosus (PDA) 18%, atrial septal defect (ASD) (14.2%) and pulmonary stenosis (12.3%) 20Congenital malformations of the heart are known leading causes of death in newborn was the third commonest cause of death in our study (Fig. 8).

Intracranial haemorrhage(Fig. 6) as a cause of death was clinically misdiagnosed as severe birth asphyxia (4, 100%). Autopsy findings in these categories of neonate showed diffuse subarachnoid haemorrhage, intraventricular haemorrhage into the falx cerebri and subdural haemorrhage to be the commonest type of intracranial haemorrhage seen and misdiagnosed in these centres. None of the neonates dying from intracranial haemorrhage had advanced imaging study or simple skull x-ray carried out on presentation to aid ante mortem diagnosis. These could be attributed to the length of hospital stay, time at presentation, lack of advanced imaging studies(CT scan, MRI) and the high cost of such facility.

Conclusion: The study confirms the usefulness of neonatal autopsy in ascertaining the definitive cause of death. This is not a conclusion of this article. Severe birth Asphyxia was identified as the commonest cause of death in the neonatal period followed by birth trauma, kernicterus and congenital heart diseases. Traditional birth attendant plays a major role in the increase rate of neonatal mortality resulting from birth Asphyxia. Further training is strongly advocated for Traditional birth attendant as they appear to be the first point of care for our pregnant women.They are not objectives of this work.

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