A retrospective study on perinatal post-mortems

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Abstract

A post-mortem examination is the key to the recognition of pathologies related to perinatal deaths. A perinatal death could be related to fetal, maternal or placental factors. A complete perinatal post-mortem (PPM) includes examination of the dead body and the placenta. The PPM findings assist the clinical team in confirming their clinical findings and uncover the additional pathologies, and the family for future pregnancy planning. This study was carried out to identify the number of perinatal post mortems (PPMs) reported during the study period, the number of PPMs with multiple congenital anomalies and the number of PPMs accompanied by a placenta and the number of placentae with identifiable pathology.

This study was on already reported PPMs in a tertiary care center from January 2011-August 2016. Multiple congenital anomalies were noted in 14% (16/118) of the PPMs. Placentae were submitted for examination in 26% (31/118) with clinically significant placental pathologies in 23% (7/31). In 64% (76/118) of PPMs there were no gross abnormality in the fetus/baby. The placenta was not available for examination in 72% (55/76) and therefore, the possibility of placental pathology, which might have led to the death, could not be excluded.

Key words: perinatal post mortem, congenital anomalies, placental examination

Introduction

Perinatal period is defined as the period between 28 complete weeks of gestation up to one week after the birth of a baby. Perinatal deaths could be related to fetal, maternal or placental factors and include intrauterine deaths and deaths after the delivery. A PPM is the key to the recognition of pathologies related to perinatal deaths, which ideally should include complete examination of the body of the dead fetus/baby and examination of the

placenta (Ohlsson, et al., 1987; Pinar, 2004; Squier& Cowan, 2004; Desilets&Oligny, 2011). Findings of a PPM assist the clinical team in confirming their clinical findings, uncovering the additional pathologies and in understanding the pathology related to the death. It also helps the family for future pregnancy planning (Pinar, 2004). However, for many reasons, including lack of understanding of the importance of requesting a post-mortem following a perinatal death, due to unavailability of the parent's consent or a competent person to perform the procedure, a PPM is not performed in all perinatal deaths, which results in unsolved questions regarding the events that led to the death.

Performing a PPM differs to that of an adult post mortem procedure. The former requires special attention on age related anatomical variations of the organ systems, congenital anomalies and the pathologies related to the perinatal period (Keeling, 2001; Joint Working Party of the Royal College of Obstetrics and Gynecologists and the Royal College of Pathologists,1988; Royal College of Paediatrics and Child Health, 2002; Royal College of Paediatrics and Child Health, 2002). The PPM procedure itself is a challenge because of the smaller size of the body. It is important to recognize that examination of the placenta is an integral part of a PPM examination (Altshuler,1996; Rhone, et al., 2003; Faye-Petersen, 2008; Robers, 2008). At the clinical setting however, the management of the baby and /the mother's clinical condition takes the priority. The importance of examination of the placenta in this context is easily over looked, which prevents discovering some vital information related to the death of the baby/fetus (Altshuler, 1993). In the local setting, there is no storing system for placentae and placentae are not submitted regularly for examination for the conditions which requires comprehensive macroscopic and microscopic examination. Therefore, compared to the other fields of the pathology, most pathologists have limited experience in pathologies related to the placentae (Tellefsen & Vogt, 2011).

With modern health care facilities, the maternal factors leading to perinatal deaths have declined markedly. However, placental and fetal factors leading to perinatal deaths are yet to be understood. Limited amount of research has been carried out on perinatal pathology and placental pathologies (Pinar, al., 2011). Therefore, actual data is not available at national level for the stakeholders to take appropriate preventive measures. Understanding of the pathologies related to the fetus and the placenta lies partly with a comprehensive PPM examination. Therefore, establishment of a proper perinatal pathology service in the Sri Lankan setting is an important task. As a laboratory providing

the perinatal pathology service to a tertiary care hospital, to upgrade the perinatal pathology service, it is important to understand the current level of practice the laboratory provides (Parker et al., 2011).

Objectives

This study was carried out in the setting of a tertiary care hospital on already reported perinatal post-mortems from January 2011 to August 2016. All these post mortems were pathological post mortems and no judicial post mortems were included in the study. The aims of this study were, to identify the number of perinatal post mortems (PPMs) reported during the study period, identify the number of PPMs that showed multiple congenital anomalies and identify the number of PPMs accompanied by a placenta and the number of placentae with an identifiable pathology.

Methodology

The data of the already reported perinatal post-mortems were obtained from the registries maintained at the department. The process of a perinatal post mortem included the informed written consent of one or both parents to perform the PPM and to take tissue for further examination. This was followed by a written request from a specialist medical officer along with an authorization of the head of the institution, the director of the hospital, to carry out the PPM. All these post mortems were performed at the hospital mortuary by a consultant histopathologist or a postgraduate trainee in pathology under the supervision of a consultant. Routine macroscopic examination during a PPM included a detailed external examination along with taking the standard measurements. The internal examination included examination of the brain, organs of the thoracic cavity and the abdominal cavity. The sequence of the steps in each post-mortem was planned according to the suspected abnormality of the individual post-mortem. A detailed placental examination was carried out where the placenta was submitted. A data collecting form was used as a guide. Microscopic examination was carried out whenever necessary. The final post-mortem report included a summary of the maternal history, external examination, internal examination, assessment of the maturity and an overall comment.

Results

A total of 118 PPMs were reported during the study period. 65 % (75/118) of these were premature deliveries, delivered before 37 weeks of gestation. 56% (67/118) of the PPMs

were performed following intrauterine deaths. 14% (16/118) of these PPMs showed multiple congenital anomalies (Table 1). Placentae ware submitted for examination in 26% of PPMs (31/118) and clinically significant placental pathologies were noted in 7/31 placentae (23%) (Table 2). 76/118 (64%) of PPMs showed no gross abnormality in the fetus/baby and placenta was not available for examination in 72% (55/76).

Table 1

Major congenital anomalies noted in the PPMs
Lung hypoplasia
Single ventricle of the heart
Hypoplasic abdominal muscles
Gastrochisis
Omphalocele
Diaphragmatic hernia
Neural tube defects eg. meningomyelocoele, anenchephaly
Skeletal abnormalities / limb abnormalities; eg: arthrogyphosis, rocker-bottom feet
Posterior urethral valves, bladder hypertrophy, hydroureters, hydronephrosis, polycystic kidney disease
Imperforated anus

Table 2

Pathologies noted in the placentae
Placental infarcts
Intraplacental haemorrhage
Chorangioma
Small placental size for gestational age

Discussion

This study showed that placentae were not available for examination in most of the PPMs to diagnose/exclude the possibility of related placental pathologies. Therefore, it is

important to educate the clinical staff to include the placenta in PPMs. If a baby dies within one week of birth, ideally the placenta should be available for examination. Therefore, it is also important to arrange a storing system for placentae of all deliveries at least for one week.

Conclusion

14% of PPMs showed major congenital anomalies. Placenta was not available for examination in majority of the PPMs, therefore cannot exclude the possibility of placental pathology, which might have led to the death of the fetus / baby.

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