

ABSTRACT

Objectives:

To determine the association of placental pathology and stillbirth at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH).

Design:

Retrospective study analysis.

Setting:

This study was conducted at CMJAH, a tertiary academic hospital in Gauteng Province, Republic of South Africa (RSA).

Population:

We conducted a retrospective study of 122 stillbirths by reviewing placental histology reports at CMJAH. Specifically, our investigation retrieved and reviewed all cases of placentas submitted to pathology following stillbirth during the period January 2016 to July 2018 (19 months). Thereafter, placental histopathology was evaluated, analysed and categorised according to the Amsterdam Placental Workshop Group Consensus Statement.

Methods:

This retrospective review study comprised of a total number of 122 placentas from stillbirths more than 28 weeks at CMJAH. Our study only included placentas submitted to the laboratory during the period January 2016 - July 2018 (19 months). The reports and slides were retrieved and reviewed. The maternal data was retrieved from the patients' hospital records and clinical information regarding the foetus was cross-referenced from the maternity registers and hospital records.

The placental pathology was reported using the Amsterdam Placental Workshop Group's consensus criteria. However, placentas of live births and those derived from patients with congenital abnormalities were excluded from the study. Moreover, placentas of patients with incomplete data that prevented accurate classification according to the Amsterdam Placental Workshop Group's consensus criteria were also excluded.

Placental heterogeneity and its relations to maternal characteristics was explored using latent class cluster analysis (LCCA) with Latent Gold 5.1.

Main Outcome measures:

The commonest histopathologic condition associated with stillbirth in our setting was ascending intrauterine infection. Furthermore, maternal clinical conditions commonly observed were hypertension (n=43; 35.25%) and HIV infection (n=32; 26.23%).

Results:

The most common histological findings associated with stillbirth were acute chorioamnionitis (foetal response) (CA_F) (n=61; 50%), chorioamnionitis (maternal response) (CA_M) (n=49; 40.16%), foetal vascular malperfusion (FVM) (n=42; 34.43%), maternal vascular malperfusion (MVM) (n=42; 34.43%), retroplacental haemorrhage (RPH) (n=27; 22.13%), APH (n=19; 15.83%) and intrauterine compromise (n=18; 14.75%). However, the least common histopathological abnormalities findings that contributed towards neonatal mortality were delayed villous maturation (DVM) (n=6; 4.92%), maternal floor infarction/ massive perivillous fibrin deposit (MFI/MPFD) (n=5; 4.10%) and meconium-associated vascular necrosis (MAVN) (n=4; 3.28%).

There were five distinct classes that emerged upon performance of the latent class analysis showing heterogeneity in our stillbirth population.

The first class was high in FVM, low in MVM and CAF with placentas near the 10th centile. Class 2 was high in MVM, and low CAF CAM, FVM, and VUE. Placental weight was more likely to fall short of the 10th decile than any other class. Class 3 had a 99% probability of RPH. CAF, placenta weight, CAM, FVM, MVM, and VUE were low. Class 4 was distinguished by high CAM, while placental weight, FVM, MVM, VUE, RPH were low. Class 5 had high CAF, FVM, MVM, and RPH and low VUE. This cluster was also distinguished by a high HIV probability.

Conclusion:

In our setting, chorioamnionitis is the most frequent pathological process observed in stillbirth placentas, particularly in HIV-positive individuals.