

Preventable perinatal mortality: The great challenge

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Objective

Historical trends in late-fetal mortality, in developed countries, may have important implications for both the current level and future trends in developing countries. Worldwide 2.7 million stillbirths and 3.1 million neonatal deaths per year are documented. Global challenge. The primary objectives were to analyze long term trends in perinatal mortality from 1971 to 2015 and, determine the incidence and risk factors of stillbirths and neonatal deaths specific to hospital-based deliveries over a 15-year period (2000 to 2015). The aim was to define significant changes which would perpetuate new lines of investigation. As a secondary objective, maternal mortality was analyzed in order to emphasize the improvements in this area.

Methods

A retrospective observational study was conducted, from January 1971 to December 2015. Time series modeling is used to represent data. National statistics are compared to our cohort. Secondly, we extrapolated from the first cohort (312.302 deliveries taken place from 1971 to 2015), a smaller cohort (33.718 deliveries) including classical and extended perinatal mortality from January 2000 to December 2015. We analyzed rates of perinatal mortality; main causes of stillbirths and neonatal deaths and fetal/maternal risks factors. As a secondary objective we present an analysis of maternal mortality during a 17-year period (1998-2015).

Results

From January 1971 to December 2015, 312.302 deliveries have been documented in a tertiary hospital located in Mallorca, Spain. A long term trend analysis of multiple variables has led to the following results: 58% decrease in deliveries and an increase of 25, 28% in cesarean rates. The number of multiple gestations (twins) has increased over the years, 40% since 1971. In addition, mortality and prematurity have suffered deep changes. As prematurity has increased in 11, 8%; classical perinatal mortality has decreased from 12, 64‰ to 3, 27‰. This implies a reduction of 9, 37‰ (74%). Perinatal mortality has been reduced since 1971, at the expense of increasing prematurity. Stillbirths have declined less rapidly than neonatal death. This aggravates future consequences because preterm die and have long-term neurological and developmental disorders than those born at term. For a 15 year period, January 2000 to December 2015, we were able to determine causes of perinatal death. We studied diverse variables: maternal age, parity, risk factors (before and during pregnancy) and divided results depending on weeks of gestation. Perinatal deaths rates (≥ 1.000 g – < 7 days of life) used for international comparisons, remain stable between 2000 to 2015: 4-8‰. Extended perinatal mortality rate (≥ 500 g - < 28 of life), has also remained stable, but with higher rates: 12-16‰. The differences are clear, patients inclusion is greater in the extended perinatal mortality rate. From 2000 to 2015, 180 stillbirths were recorded (extended perinatal mortality). Main causes of fetal mortality were related to diseases of the placenta (causing fetal growth restriction and, more acutely, placental abruption). In terms of asphyxia, a constant percentage of cord accidents have been recorded, but unfortunately a large proportion were unexplained even after a thorough evaluation. An increase in maternal age and primiparity are associated with an increase of stillbirths between 37-41 weeks gestation: late pregnancy loss. Risks factors such as pre-eclampsia, diabetes and multiple gestations have been directly associated with an increase in intrauterine growth restriction and other pathologies with high risk of perinatal mortality. However, a greater understanding and follow up of these patients has reduced significantly perinatal mortality in this group. The types of stillbirths which have been reduced over these 15 years are mostly related to specific strategies implemented in our maternity and worldwide, with the aim of diminishing risks. As a result, fetal deaths related to asphyxia in labor, Rhesus disease, congenital malformations and disease of the mother have been reduced. Focusing on neonatal deaths, the mayor consequence of mortality in our cohort was mainly prematurity. Causes of death described such as, intraventricular hemorrhage, hyaline membrane disease, and hypoxic ischemic encephalopathy are secondary to the main cause: prematurity. Thirdly, over a 17 year period, there have been 33778 livebirths and 8 maternal deaths. In 1998, 2000 and 2006 it has been described three direct obstetrical causes of maternal mortality. Since 2006 up to date, maternal mortality has been due to indirect obstetrical causes or unknown.

Conclusion

Perinatal mortality remains a great challenge for Obstetricians and Pediatricians. By focusing some light on the problem of perinatal mortality, there has evolved a number of new and potentially helpful observations. The importance of preventable perinatal mortality relies on the understanding of historical trends. Long term analysis contributes to new lines of investigation in order to improve outcomes. Changes have occurred during the last 44 years. An increase in cesarean sections; a reduction in perinatal mortality compared to an increase in prematurity and multiple gestations, are the greatest variations. Focusing on prematurity, as numbers increase due to improvements in antenatal diagnosis, obstetrical management and experienced neonatologists; long term consequences of prematurity need to be investigated deeply. The need to clarify if the reduction in mortality does not imply awkward sequelae or an increase in infant mortality should be the next step. Even long term trends demonstrate a reduction in stillbirths since 1971; the number stabilizes since 2000, with no great changes. The single largest risk factor is placental disease: unrecognized fetal growth restriction, pre-eclampsia, abruption and at the end of the path: prematurity. Preventive strategies need to focus on improving even more, antenatal diagnosis of fetal pathology and diminishing maternal modifiable risk factors. However, the clue lies on achieving a solution to placental insufficiency, preterm premature rupture of membranes, chorioamnionitis, definitively: preterm birth leading to prematurity. Preventing perinatal mortality should be the target. Understanding historical long term trends is crucial.