Epidemiology of Excessive Foetal Growth in Neonates Across the NSLHD - a Retrospective Cohort Study

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Introduction

Excessive Foetal Growth (EFG) is a common and predictable obstetric complication with important implications for perinatal outcomes for both the mother and the child (1). EFG can be defined as either macrosomia (neonatal birth weight >4000g at birth) or as large for gestational age (LGA, birth weight above the 90th percentile for gestational age). Whilst used interchangeably, LGA is favoured as a more reliable definition, because by definition it factors in gestational age and thus takes into consideration prematurity, term and post-dates deliveries (1, 2, 4, 5).

The incidence of EFG is quite variable, although increasing globally (1, 6). Estimates of macrosomia in Scandinavia, America and Italy show rates of 11.2%, 9% and 7.6% respectively, which are all increasing in prevalence and degree, especially in Scandinavia (4-6). Limited Australian data shows similar prevalence, with data from Queensland showing a prevalence of 12.8% and a growth of 0.8% and 4.5g per annum, over the 17 years prior to 2005 (1). EFG has important implications for the health of both the mother and child. Delivery of EFG babies is associated with greater birth trauma, including perineal laceration, peripartum haemorrhage, uterine atony, uterine rupture and increased length of stay (5, 8).

However, growing trends towards overweight/obesity, advanced maternal age and maternal diabetes in the Australian obstetric population are likely to be increasing the incidence of EFG, and full exploration of the risk and implications of EFG within the Northern Sydney Local Health District (NSLHD) may better inform healthcare providers and influence delivery of antenatal care (1, 3). Therefore, the objective of this study was to investigate EFG within the NSLHD. Specifically, the aims were to define the demographic characteristics of EFG neonates and describe the role of known risk factors associated with the development of and severity of EFG. In addition, this report aimed to investigate how EFG translates to perinatal complications and the rate of antenatal EFG detection.

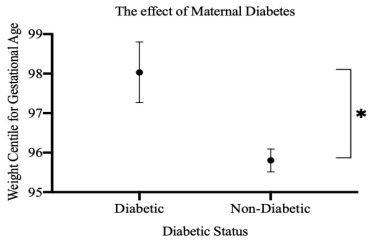

Figure 1. Influence of diabetic status on weight centile of neonate.

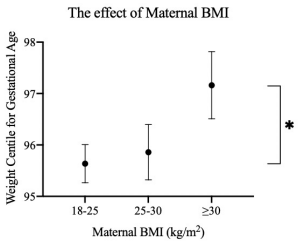

Figure 2 - Influence of Maternal BMI on weight centile of neonate

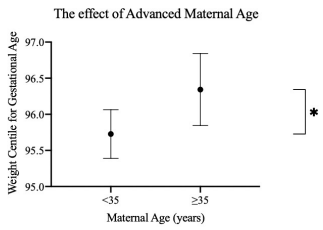

Figure 3. Influence of Advanced Maternal Age on weight centile of neonate

Discussion

EFG births in the NSLHD exhibited very low rates of antenatal prediction of EFG, with only 8% of EFG pregnancies being detected clinically or via antenatal ultrasound. Rates of diabetes were low (5.01%) compared with NSW general obstetric population (9.8%) as well as other EFG populations internationally (3, 5, 6). This is surprising considering that within this EFG subpopulation one would expect an increased incidence (4). Despite this, the significant relationship between any form of diabetes and the degree of EFG is consistent with global trends, demonstrated in figure 1 (4). Again, inaccurate recording may also explain this low incidence. Firstly, maternal obesity was associated with an increased degree of EFG, demonstrated in figure 2. The number of pregnancies exhibiting AMA (maternal age 335) was high (32.74%) compared with state-wide obstetric averages (23.4%) as well as international EFG populations (23-29%) (1, 3, 6). However, the NSLHD does have an increased rate of AMA across all pregnancies (39.1%) , making it a significant issue within the area and correlating with this studies data (3). The significant relationship between EFG, AMA and very advanced maternal age (maternal age 340) correlates with existing global and local trends and is demonstrated in figure 3 (4, 6, 7). Finally, the most important consideration was whether these increased degrees of EFG equated to poor perinatal outcomes. Data revealed a statistically significant relationship between EFG degree and adverse perinatal outcomes and a present but non-significant relationship between number of poor outcomes and degree of EFG. Unfortunately, limited data regarding maternal morbidity was able to be sourced. This finding correlates with existing data in the field, and highlights the clinical importance of EFG(5).

Conclusion

As a final word, this study has identified important correlations and differences from existing epidemiological trends within the NSLHD, that can inform health care provides and policy makers. EFG is a significant issue in the NSLHD. It remains heavily underdiagnosed antenatally and investigation of the reasons behind this are warranted. Within the NSLHD, maternal obesity, advanced maternal age and maternal diabetes predict EFG. In comparison to national and international data, maternal diabetes is less relevant but advanced maternal age more relevant in the development of EFG in the NSLHD (4, 6). Unfortunately, EFG continues to have important negative implications for women and their neonates within NSLHD which highlights the importance of considering this data in the prevention, identification and management of EFG within the NSLHD.

Methods

Results

References