The Epidemiology of Low Birthweight

Michael S. Kramer

This paper reviews the epidemiology of low birthweight (LBW), i.e. a weight at birth <2,500 g. Because birthweight is determined by both the duration of gestation and the rate of fetal growth, LBW can arise because an infant is born too soon (preterm birth) and/or too small for his/her gestational age (SGA; see fig. 1) [1]. This distinction is important in understanding recent temporal trends in developed countries, which show a rising incidence of preterm birth [2] but a decline in SGA birth due to an increase in the weight of infants born at term [3].

Preterm birth has been estimated to affect nearly 10% of all births worldwide, 85% of whom are concentrated in Africa and Asia. SGA birth affects over 20% of the world births, with 95% occurring in Africa and Asia. It remains unclear the extent to which population differences in birthweight for gestational age are physiologic (‘normal’) vs. pathologic.

Preterm birth is the world’s leading cause of infant mortality [4]. Although SGA infants born at term are also at somewhat increased risk of infant death, much of the recent literature focuses on long-term associations with chronic diseases of adulthood, including hypertension, type 2 diabetes, and coronary heart disease [5].

The major known causes of preterm birth include multiple birth, genitourinary tract infection, pregnancy-induced hypertension/pre-eclampsia, low maternal pre-pregnancy body mass, short cervix, cigarette smoking, placental abruption, prolonged standing and lifting at work, and cocaine use during pregnancy [1]. Early labor induction or prelabor cesarean delivery to reduce risks of stillbirth and/or maternal morbidity due to pregnancy complications is making an increasingly large contribution to the rise in preterm birth in high- and middle-income countries. The major causes of SGA birth include maternal cigarette smoking, low gestational weight, low maternal pre-pregnancy body mass, short stature, primiparity, pregnancy-induced hypertension/pre-eclampsia, malaria, congenital anomalies, other genetic factors, and alcohol/drug use [1].

Effective interventions to prevent preterm birth are limited to intensive counseling of pregnant women to reduce their cigarette smoking and progesterone treatment of women with short cervix or prior history of
preterm birth. Counseling to reduce cigarette smoking is also effective in reducing the risk of SGA birth, as are balanced energy/protein supplementation during pregnancy and malaria prophylaxis (in endemic areas).

Many countries in the world have succeeded in lowering their rates of infant mortality. To my knowledge, however, none has succeeded in doing so by reducing its rate of LBW. Preventing LBW, preterm birth, and SGA birth are laudable, but thus far elusive, public health goals. Achieving those goals will require far more research.

References


Fig. 1. Venn diagram indicating the relationship between LBW, SGA birth, and preterm birth (PTB).