



REVIEW

Management of preterm infants with intrauterine growth restriction

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KEYWORDS

Intrauterine growth restriction;
Preterm;
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Neonatal care;
Outcome;
Review

Abstract Preterm intrauterine growth restriction (IUGR) is strongly associated with increased mortality and morbidity. In the management of these infants, complications of preterm birth can be amplified by the effect of suboptimal fetal growth. It is important that pregnancies with IUGR are detected before birth, so that delivery can be arranged in a high-risk maternity unit with the appropriate neonatal staff in attendance. The provision of full support for resuscitation and stabilisation of these infants is crucial to the short-term and long-term health of these infants, who have suffered chronic hypoxia and malnutrition in utero. The long term outcome studies of these infants are retrospective and they include SGA infants. The effects of prematurity affect the outcome of IUGR infants. IUGR is associated with cerebral palsy in those delivered more than 32 weeks gestation. Infants less than 32 weeks of gestation may have poor developmental outcome if the head growth is affected, these infants may have associated cognitive and behavioural problems. Children who fail to grow by 2–4 years are at risk of long term growth problems.

This paper outlines the acute and long-term management of these infants.

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Abbreviations: IUGR, intrauterine growth restriction; CP, cerebral palsy; SGA, small for gestational age; CMV, cytomegalovirus; RDS, respiratory distress syndrome; AGA, appropriate for gestational age; AREDF, absent and reversed end diastolic flow; EDV, end diastolic velocity; NEC, necrotising enterocolitis; PVL, periventricular leucomalacia; IVH, intraventricular haemorrhage; PCV, packed cell volume; HGH, growth hormone.

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1. Definition

Small for gestational age (SGA) describes a newborn whose birth weight is at least 2 standard deviations (SD) below the mean (≤ -2 SD) for the infant's gestational age, based on data derived from a reference population. SGA has also been defined in some publications as birth weight or length below the 10th, 5th, or 3rd percentile for gestational age. These infants will have appropriate intrauterine growth but are small due to an interaction of multiple factors like constitutional genetics of parents, maternal height and weight, parity and sex.

SGA and IUGR are not synonymous. Intrauterine growth restriction (IUGR) suggests diminished growth velocity in the fetus as documented by at least 2 intrauterine growth assessments [1]. IUGR indicates the presence of a pathophysiologic process occurring in utero that inhibits fetal growth. Gestational age is most accurately determined with ultrasound examination between 10 and 12 weeks gestation [2] in conjunction with dates of last menstrual period.

The third National Health and Nutrition examination survey showed a prevalence of US newborns

who are SGA of 8.6% of all live births. 28–70% of all infants who are SGA are constitutionally small and the remaining 30% are growth-restricted infants.

Preterm IUGR with birth weight between 501 and 1500 g is associated with increased risks of necrotising enterocolitis, neonatal death and respiratory distress syndrome [9,70]. These infants are at risk of adverse outcome resulting from immaturity and deficient intrauterine growth.

2. Interpretation of neonatal outcome studies of IUGR

Most studies on neonatal outcome have included SGA babies. It is easier to define SGA at birth than IUGR as the techniques to detect 'true' IUGR involves antenatal assessment including ultrasound Doppler and not all mothers have routine Doppler studies. The use of Doppler studies in fetal growth assessment and customised fetal growth charts [71] have helped to identify these high risk infants more adequately.

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