Problems in small babies

Premature babies and small for gestational age (SGA) babies are more prone to the ailments that can affect all newborn infants because many of their physiological systems are not yet fully developed. Many of these problems are neither life-threatening nor have long-term sequelae. However, some of them can also develop into a severe condition if not treated effectively and promptly.

Small babies, both premature and SGA, are at risk of complications, both during the neonatal period and long-term. There is a separate article on Premature Babies and their Problems. This article will therefore mainly deal with SGA infants.

The risk of perinatal and long-term complications for SGA babies will depend on whether the baby is constitutionally small, small as a result of intrauterine growth restriction (IUGR), or small as a result of a specific underlying cause such as intrauterine infection or chromosome abnormality. See the separate Small for Gestational Age Babies and Intrauterine Growth Restriction articles for further information.

A study of all live singleton births in England and Wales in 2006-2012 found that ethnicity-sex-specific centiles for Black and Asian presented lower values compared with the White centiles. Comparisons of sex-specific and ethnicity-sex-specific centiles showed that use of sex-specific centiles increased the SGA diagnosed cases by 50% for Asian, 30% for South Asian (Indian, Pakistani and Bangladeshi) and 20% for Black ethnicity.[1]

Neonatal presentation of intrauterine growth restriction

The clinical features of IUGR will depend on the underlying cause and whether the IUGR is predominantly symmetrical or asymmetrical. See separate Intrauterine Growth Restriction article for more information.

The clinical features at birth associated with IUGR include:[2]

- Large head when compared to the rest of the body (brain sparing effect).
- Large and wide anterior fontanelle.
- Anxious and hyper-alert infant.
- Absence of buccal fat (old man look).
- Long fingernails.
- Loose, dry and easy peelable skin.
- Loose fold of skin in the nape of the neck, axilla, interscapular area and gluteal region.
- Poor skeletal muscle mass and subcutaneous fat with thin arms and legs.
- Small or scaphoid abdomen.
- Poor breast bud formation and immature female genitalia.
- Relatively large and thin hands and legs compared with the body.
- Thin umbilical cord, often stained with meconium.

Perinatal complications associated with intrauterine growth restriction[2]

The complications for babies following intrauterine growth retardation include:

- Birth/perinatal asphyxia.
- Meconium aspiration.
- Hypothermia.
- Retinopathy of prematurity.
- Persistent pulmonary hypertension.
- Pulmonary haemorrhage.
- Feed intolerance, necrotising enterocolitis.
- Polycythaemia, hyperviscosity.

- Renal dysfunction.
- Late-onset sepsis.
- Necrotising enterocolitis.
- Immunodeficiency.
- Hypoglycaemia, hyperglycaemia, hypocalcaemia, low serum ferritin.
- Jaundice.
- Feeding difficulties.

Long-term complications of small for gestational age babies

SGA children are at higher risk of attaining an adult height below their target height, as well as of developing metabolic disorders (obesity, metabolic syndrome, type 2 diabetes) and cardiovascular diseases. These children are also prone to have precocious pubarche, exaggerated precocious adrenarche, an earlier onset of menarche, and faster progression of puberty than children born appropriate for gestational age. [3]

Neurodevelopmental problems

SGA infants have an increased risk of poorer neurodevelopmental outcomes compared to being appropriate for gestational age. [4]

- Lower scores on cognitive testing.
- Difficulties in schools or requiring special education.
- Gross motor and minor neurological dysfunction.
- Behavioural problems (attention deficit hyperactivity disorder).
- Lower strength and work capacity.
- Cerebral palsy.
- Low social competence.
- Poor academic performance.

- Lower levels of intelligence.
- Hyperactive behaviour.
- Poor perceptual performance.
- Poor visuo-motor perception; motor incompetence and difficulties with reading and with learning mathematics.

Increased risk of other long term complications [2]

- Growth failure.
- Hypertension.
- Hypercholesterolaemia.
- Cardiovascular disease.
- Obesity, metabolic syndrome, type 2 diabetes mellitus.
- Kidney disease, liver disease.
- Lung abnormalities: reactive airways disease.
- Cancer: breast, ovarian, colon, lung, blood.
- Schizophrenia.
- Parkinsonism.
- Alzheimer's disease.
- Polycystic ovary syndrome, premature pubarche.
- Shortened lifespan.
- Depression, anxiety, bipolar disorder.
- Immune dysfunction.
- Osteoporosis.
- Social problems.

Further reading

- The Investigation and Management of the Small-for-Gestational-Age Fetus; Royal College of Obstetricians and Gynaecologists Green-top guideline (updated January 2014)
- Postpartum care; NICE Guidance (April 2021)
- Nakano Y; Adult-Onset Diseases in Low Birth Weight Infants: Association with Adipose Tissue Maldevelopment. J Atheroscler Thromb. 2020 May 1;27(5):397-405. doi: 10.5551/jat.RV17039. Epub 2019 Dec 20.
- Small Vulnerable Newborns; an Executive Summary for The Lancet's Series. May 2023.

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