

Intrauterine Growth Retardation (SGA)

Introduction

Intrauterine Growth Retardation (IUGR) refers to the condition resulting in growth retardation at birth. These newborns are significantly smaller than average for the length of time the fetus (baby) is in the mother's uterus (womb). This condition is different from the more common cause of small size, prematurity (when a baby is born 3 or more weeks early). In some situations a newborn can have both prematurity and intrauterine growth retardation.

Fetal Growth (growth in the womb)

Physical growth begins when the egg and sperm combine. The size and shape of a human results from the original genetic information or program. The ability of a person to reach his/her ultimate potential depends on this as well as numerous other factors. This is also true for growth during the time an individual is in the womb. Factors, other than inheritance, which can influence growth, include the environment in the womb, nutritional factors regarding the placenta and mother, hormones and other unknown factors. Normal growth in the womb occurs at a very rapid rate. The average time in the womb is forty weeks and is called the gestational period. A normal full-term baby is on the average, 7 1/2 pounds, and is known as appropriate for gestational age (AGA). A premature baby is smaller but is usually AGA because the size is appropriate for the length of time the baby is in the womb. The small for gestational age (SGA) infant is below the 10th percentile on a standard growth chart. IUGR and SGA are often used interchangeably but the distinction is important. The term IUGR should not be used where there is no evidence of abnormal genetic or environmental influences affecting growth. The IUGR infant is really less than the third percentile (1 in 33 children) and not one in ten newborns as is the case for AGA newborns. Thus, all IUGR infants are SGA but not all SGA infants are IUGR. This is an important issue for the parent to consider when the doctors and nurses use these different terms.

Frequent Questions Parents May Ask

A frequent question is: "How can doctors tell the difference physically between a small baby who is premature and/or intrauterine growth retarded?"

Two criteria are used: physical (for example, skin texture and thickness, creases on soles of feet, firmness of ears, and appearance of the genitals) and neurological (for example, posture or type of flexion of hands and feet).

Another question a parent may ask is: "Why is it important to determine whether a small newborn or yet unborn baby is premature or IUGR?"

The reason is that the potential medical difficulties after birth may be different. Some premature newborns have no problems at all whereas some may have immature lungs causing respiratory distress syndrome, "yellow" jaundice due to immaturity of liver function, and apnea which is an irregular breathing pattern caused by an immature nervous system. On the other hand, some of the medical problems of IUGR babies include low blood sugar (hypoglycemia), low blood calcium (hypocalcemia), thick blood (polycythemia), and swallowing of fluid from the amniotic sac at birth (meconium aspiration). Both groups of newborns must be observed closely for signs of lack of oxygen, infection and low temperature (this latter problem in the IUGR infant results from the diminished fat tissue which would help hold the infant's body temperature).

Another question a parent may ask is: "When should a pediatric endocrinologist (a doctor who specializes in growth disorders) be consulted?"

An appropriate time is when your child is still an infant (one year of age or less) and not catching up to the lower part of the normal range for his/her age (for example, less than the 5th percentile on a growth chart). When your child is older, the doctor may recommend specific medical therapy to try to enhance your child's growth.

Causes of Intrauterine Growth Retardation (IUGR)

In thinking about reasons that babies have IUGR, there are three major categories including maternal, fetal and environmental factors and influences.

Maternal factors include:

- small size of the mother;
- first born in multiple birth pregnancy;
- multiple fetuses in the same pregnancy;
- mother's nutritional status during pregnancy;
- abnormalities of the blood supply to the placenta;
- boys heavier than girls by 2 1/2 to 3 ounces;
- weight of newborn in first pregnancy less than subsequent pregnancies;
- abnormal shape or size of the mother's womb;
- diseases or conditions in the mother affecting blood vessels such as high blood pressure, toxemia or eclampsia, recurrent bleeding during the pregnancy and diabetes mellitus;
- any chronic or prolonged illness in the mother such as diseases of blood cells (for example, sickle cell disease);
- infections in the mother including syphilis, herpes, German measles (rubella), toxoplasmosis.

Fetal influences and factors which may cause IUGR include:

Abnormalities of chromosomes (examples are Turner Syndrome and Down Syndrome); Other genetic abnormalities not due to chromosomal problems such as Russell-Silver Syndrome, bony (skeletal) developmental abnormalities and a long list of syndromes which cause small size in the newborn;

Defects related to the placenta (which provides oxygen and nutrients from mother to fetus) and umbilical cord (includes the blood vessels and provides the connection between the placenta and the fetus). For example, the blood supply can be decreased because there is only one rather than two arteries in the umbilical cord;

The blood supply may be limited because of compression or wrapping of the umbilical cord around a body part such as the leg;

In an identical twin birth, one of the two fetuses may get a significantly better blood supply causing IUGR in the other twin;

Various fetal defects including abnormalities of the heart.

The environment is very important; whatever drugs, medications or other agents the mother takes may have a direct impact including: cigarettes, alcohol, cocaine, smoking, Coumadin (warfarin) and Dilantin (Phenytoin), and even living in an area of high altitude can be a cause.

Outcome or Prognosis (expectation in the future)

In the newborn period the doctors will want to do diagnostic studies to determine the cause of IUGR if at all possible. They will also try to determine the gestational age of the newborn. Ultimately, the most important aspects of IUGR are the intellectual or other neurological developmental outcomes, including learning disabilities. This to a major degree reflects the underlying cause. These issues point out the importance of attempting to find out the underlying cause so the appropriate plan of therapy is developed for the specific child.

IUGR infants who are also premature are at greater risk for medical problems than full-term IUGR infants. In terms of growth some IUGR babies do catch up and become average-sized children and adults. The pattern for this catch-up growth is likely first and best seen during the first year of life. The growth patterns or growth charts of children with various disorders (for example; Turner, Russell-Silver, and Down Syndromes) are available for parents.

For parents, the take home message about IUGR is, first and foremost, prevention. Second, it is important to determine whether there is IUGR during fetal development (determined under the guidance of the obstetrician or appropriate health care worker). The obstetrician often uses an ultrasound to assess for problems relatively early in the pregnancy.

When IUGR is recognized, appropriate treatment of the mother and later newborn should be implemented. Studies to determine the cause in the fetus and/or newborn are important. Parents, physicians, and health care workers need to work together to provide the best possible outcome for the individual child.

Contributed By:
Barry Bercu, M.D.
St. Petersburg, FL