

## **Menstruation and Pregnancy in Women with Myasthenia Gravis**

The purpose of this booklet is to provide women diagnosed with myasthenia gravis (MG) with information about the influence and relationship MG has on the reproductive system. It contains information on the phases of the menstrual cycle including the hormonal effect on MG, pregnancy and myasthenia, and the possible effect of neonatal myasthenia on the infant.

### **Menstruation**

Menstruation is the discharge of bloody fluid from the uterus at regular intervals. It starts at puberty and continues until menopause is completed. The menstrual cycle may vary from 22 to 35 days. Some women may have even shorter or longer cycles. The bleeding may last from three to seven days. The first day of the menstrual bleeding is the first day of the menstrual cycle. In a 28 day cycle, days one through five are often referred to as the menstrual phase. It is during this phase that the inner lining of the uterus sheds resulting in menstrual blood flow.

During days five through fourteen there is a rebuilding of the uterine lining. The hormone estrogen, which prepares and builds the uterine lining, is being secreted by the ovaries at this time. This is called the preovulatory or proliferative phase. The growth of the Graafian follicle, which contains the ovum or egg, also occurs at this point. Full development of the ovum is reached at about the time of ovulation.

The release of a mature ovum occurring at approximately the 14<sup>th</sup> day of the cycle is called ovulation. This may vary somewhat from individual to individual. Ovulation is initiated by the rapid peak of luteinizing hormone and a slight drop in the estrogen level. The hormone progesterone is now being secreted in order to prepare the uterine lining for pregnancy.

Days 14 through 28 are referred to as the premenstrual phase of the menstrual cycle. Both progesterone and estrogen levels are elevated in this phase. In theory, it is believed that progesterone is responsible for the worsening of the myasthenia symptoms in the premenstrual phase especially since improvement occurs with menstruation. If you have noticed more weakness during this time, you should discuss this with your physician.

Conception occurs when sperm and mature ovum meet. This is most likely to occur at the time of ovulation. If conception does not occur, the Graafian follicle becomes the corpus lustrum and the lining of the uterus containing the ovum sheds. This then becomes the first day of the menstrual flow and the beginning of a new menstrual cycle.

### **Pregnancy**

How will pregnancy, myasthenia gravis and MG treatment affect each other? The course of MG in pregnancy is unpredictable. There may be no changes or symptoms may lessen, remission may occur or symptoms may worsen. It is thought that worsening can occur most commonly in the first and third trimesters. It is important for a woman with MG to see an obstetrician as soon as pregnancy is suspected. Also, the neurologist should be informed as soon as pregnancy is confirmed.

Myasthenia gravis does not affect the normal growth and development of the fetus. Fetal and maternal growth and changes are not being detailed in this booklet; there is other material available on this topic.

Obstetrical care received by a woman before the baby is born is known as prenatal care. The prenatal care for a woman with myasthenia gravis must include: increased rest, prevention and/or treatment for any illness, and continued MG therapy. **ANTICHOLINESTERASE MEDICATION** (Tensilon, Prostigmin, and Mestinon) should **NOT** be taken **INTRAVENOUSLY**. This can lead to premature labor.

Onset and duration of labor are not influenced by myasthenia gravis. The uterus comprised of smooth muscle is not affected by MG. However, the skeletal or voluntary muscles affected by MG may exhibit weakness during a prolonged labor. Medication for discomfort of labor pains is given as indicated. Pain relief is determined for each individual patient.

Anesthesia for delivery requires communication among the patient, the obstetrician and the anesthesiologist. The anesthesiologist will answer specific inquiries and discuss various types of anesthesia available. Muscle relaxants commonly used during anesthesia may produce prolonged weakness in patients with MG. As with women without MG, anesthesia may or may not be required for delivery. If it is required, the anesthesiologist and physician will decide on what is best. A cesarean section is done only when obstetrical conditions indicate.

### **Breast Feeding**

Breast feeding for a mother with myasthenia gravis is possible depending on the severity of MG symptoms. The main reason breast feeding is often discouraged is the fatigue that it causes in the mother. The frequency and duration of feedings may be too tiring. A trial period with careful observation of its effects on the mother's strength may be necessary to know if this activity is possible. Before considering breast feeding discuss your medications and questions with the pediatrician.

### **Neonatal Myasthenia**

Neonatal myasthenia is a temporary condition of general weakness in a baby born to a mother who has myasthenia gravis. The incidence of neonatal myasthenia is 12% to 20%. Not all infants of the same mother will develop neonatal MG. There is no direct relationship between a baby developing this temporary condition and the duration or severity of the mother's MG.

The mother's acetylcholine receptor antibodies (antibodies involved in destruction of receptor sites leading to muscle weakness) and possibly antibody-producing cells may be transferred to the fetus during pregnancy. There is a rapid disappearance of these antibodies in babies that do not develop neonatal myasthenia. There is a persistence of these antibodies in infants that do develop neonatal myasthenia. Also, while these babies are diagnosed with neonatal myasthenia, they may produce antibodies even in utero that may or may not be the same type antibody that the mother has produced and transferred to the infant. Eventually, all the antibodies disappear.

Neonatal myasthenia may occur from birth to approximately ten days after birth. The mother's anticholinesterase medication that passed to the fetus may delay the onset (as well as other substances produced during pregnancy such as Alfa-fetoprotein). It usually occurs within the first 24 to 48 hours after birth and may last days or weeks. It is usually self-limited, lasting three to five weeks.

Symptoms in the infant are a weak cry and weak sucking reflex, an expressionless face and possible respiratory problems. Diagnosis is confirmed by the injection of an anticholinesterase drug (Tensilon, Mestinon, Prostigmin) following which strength improves. Treatment of neonatal myasthenia consists of giving small doses of an anticholinesterase every few hours, intensive nursing care and use of a respirator if breathing is inadequate. **The development of transient neonatal myasthenia does not mean the child will develop myasthenia gravis later in life.**

Every patient reacts differently to menstruation, pregnancy and breast feeding. A close relationship with the physician is necessary to make pregnancy an enjoyable experience. Changes in MG symptoms that occur during your first pregnancy may or may not occur during future pregnancies.