Intrathecal Baclofen Therapy Used in the Management of Spasticity of Pediatric Cerebral Palsy
Parent / Patient Information

Cerebral palsy is defined as a non-progressive central nervous system deficit caused by a brain injury before birth (in utero), during birth or within the first few years after birth. It usually defines a variety of movement disorders which affect a child's ability to move and to maintain posture and balance. The muscles or the nerves connecting them to the spinal cord are not damaged from this injury, only the brain's ability to control the muscles.

Spasticity is tightness or stiffness of muscles associated with damage to the brain or spinal cord. Spastic or tight muscles may interfere with a patient's ability to move about, perform daily activities, and / or make care difficult for the parent(s) / caregiver(s). In the management of spasticity, oral medications (medications taken by mouth) and / or therapeutic intervention (i.e. physical therapy / occupational therapy) may be used. The response to these methods of spasticity management varies greatly.

Baclofen is an anti-spasmodic agent and muscle relaxant which can be administered orally (by mouth) or intrathecally (into the spinal canal). Intrathecal Baclofen Therapy (ITB) is a form of spasticity management which differs from other forms of spasticity intervention. ITB works at the site of action at the spinal cord (intrathecal space) which differs from oral Baclofen which circulates throughout the body in the blood stream resulting in only a small amount of drug actually reaching the spinal cord. For those with severe spasticity, the amount of drug from oral doses may not be sufficient to successfully control spasticity.

ITB works based on an infusion system consisting of a pump, intrathecal catheter, and an external computer. The pump is implanted under the skin in the patient's abdominal area with the catheter attached leading into the intrathecal space of the spinal canal. The pump can be programmed in one of two ways: 1) to release a continuous amount of drug over a 24-hour period or 2) to deliver different doses of drug at scheduled times during the day. The Baclofen pump will be refilled every 90 days.

The type of treatment used to manage spasticity is usually based on the severity of the symptoms. Non-invasive methods are usually tried first. However, if those methods are not successful, more interventional therapies may be used. Often multiple forms of intervention may be used in conjunction with one another. One significant advantage of ITB is that it is reversible because the pump can be removed, or the medication stopped.

Candidates for ITB Therapy

- Patients whose spasticity interferes with functional mobility and / or daily activities.

- Patients whose spasticity interferes with care and / or positioning by parent(s) or caregiver(s).
- Patients with spasticity whose oral medications are unsuccessful or present with intolerable side effects (patients who are hypersensitive to oral Baclofen are not good candidates for ITB).
- Pain due to spasticity.
- Patients who depend on varying degrees of spasticity throughout the day to perform functional activities / mobility (some patients need or use certain amounts of tone / spasticity for functional movements).

Benefits of ITB Therapy

- Patients report reduction in spasticity associated with cerebral palsy.
- ITB does not destroy nerve pathways and it is reversible (i.e. pump can be turned off and / or reversed.
- Smaller doses of drug are required since ITB works at the target site.
- Patients receiving ITB, or parent(s) / caregiver(s) of patients receiving ITB reported decreased pain, decreased contractures, and ease of care / positioning.

Potential Risks

- Risk of infection since ITB requires surgical implantation of pump.
- Drowsiness *
- Increased weakness *
- Dizziness *
- Seizures *
- Nausea / Vomiting *

* these are usually the result of too much drug

Before the pump is surgically implanted a screening test will be performed. The goal of the screening test is to verify the patient will respond to ITB therapy. One test dose of Baclofen is given by lumbar puncture to find out how much spasticity is reduced. A physical therapist will assess the patient's functional mobility, joint range of motion, and spasticity / tone immediately prior to the test dose. These same assessments will be repeated at 1 hour, 2 hours, 4 hours, 6 hours, and 8 hours after the test dose is given. Only patients who respond positively (show reduced muscle spasticity) to screening test / test dose will be candidates for surgical implantation of pump.

Prior to the surgery for pump implantation, a baseline assessment will be performed by an orthopaedic surgeon, neurosurgeon, and physical therapist. Goals for ITB therapy will be established with patients and parent(s) / caregiver(s) input. The patients will be followed every three months for maintenance of the pump.