

Treating Spasticity With Neurolytic or Blocking Agents

The following information explains how two neurolytic agents — botulinum toxin and phenol — are used to treat spasticity.

Spasticity

Spasticity is the term we use to describe muscles that are too rigid or stiff. Spasticity is common to people who have cerebral palsy, traumatic brain injuries or spinal-cord injuries. It can't be cured and is often difficult to treat.

Spasticity can affect any muscle of the body. It most commonly causes problems for the spine, arms and legs.

Normally, the brain tells a muscle to stiffen or relax as needed. In patients with spasticity, the muscles receive irregular or no messages

from the brain. Rather than relaxing, the muscles remain stiff and rigid.

Spasticity treatments focus on increasing a patient's ability to move more easily (range of motion) while decreasing rigidity and spasms. Treatments may include medicines, electrical stimulation, passive range-of-motion exercises, orthotics, surgeries, and neurolytic or blocking agents.

Neurolytic Agents

Neurolytic blocking agents, such as phenol and botulinum toxin, are medicines that interfere with the messages sent from the body's central nervous system to the muscles. Neurolytic agents are only used when spasticity greatly interferes with a person's ability to move and perform simple tasks. In addition, they're also used when other spasticity reducing techniques (i.e., bracing, motion exercises, serial casting) haven't worked. Use of botulinum toxin injections or phenol blocks may not eliminate the need for surgery; however, the medicines can help delay surgery until the patient is older, reduce the risk of complications and, perhaps, lessen the number of surgeries needed.

- **Botulinum Type A Toxin:** Botulinum type A toxin, when injected into the muscle, interferes with the release of a chemical that transmits nerve impulses. When the nerve impulse (or signal) can't reach the muscle, the muscle can't contract. Muscle weakening may begin one to three days after treatment and usually will reach its full effect in seven to 10 days. Injections may be repeated when the effect of the botulinum toxin goes away, but must be spaced at least three months apart. Botulinum toxin will be monitored for its effectiveness. In the event that it stops working, alternative treatments will be discussed.

Side effects are rare. Less than 1 percent of patients report mild, flu-like symptoms. Occasionally there is temporary soreness or skin irritation at the injection sites. Botulinum toxin injections can be repeated with no long-term cumulative or permanent effects. The injections are well tolerated by patients. Therefore, they usually are done as an outpatient procedure.

The effects of botulinum toxin injections last approximately 12 to 30 weeks. Botulinum toxin is administered through simple intra-muscular injections and is much easier to perform than phenol block. No build up of effects has been

noted with repeat injections. However, some improvements last after the botulinum toxin has worn off.

- **Phenol Block:** Phenol also is used to treat spasticity. When injected into the muscle, phenol block interferes with spasticity, but has little effect on voluntary movement.

The phenol block is done by injecting a solution of phenol into the specific sites where the nerve branches out into the muscle.

Before injecting, the doctor locates these sites in the muscle by using a motor point stimulator. When the needle is close to a nerve, the stimulator will cause the muscle to twitch. The phenol is injected directly at the nerve site to stop the signals from getting through. Stopping the signals will in turn reduce the muscle tone. The process of stimulating and injecting these nerve points usually is painful.

Phenol block injections are often performed under sedation or general anesthesia, but in some instances it may be done as an outpatient procedure.

A phenol block usually lasts four to 12 months. In some instances, phenol blocks can produce long-term effects if the nerves do not fully regenerate or a patient has gained enough range of motion during physical therapy to limit the recurrence of spasticity.

Selecting Patients

Doctors prescribe botulinum toxin or phenol blocks to meet individual patients' needs. Sometimes these medicines are used in combination.

Neurolytic or blocking agents are being used to treat spasticity in people with multiple sclerosis, strokes, eye movement disorders and certain types of neck stiffness. In addition, doctors have had success using them to treat spasticity in children. Studies of children with cerebral palsy have shown good improvement in spasticity following botulinum toxin injections. In children studied, botulinum toxin delayed or eliminated the need for surgery.

Botulinum toxin and phenol block may be used:

- To reduce tone that interferes with a patient's ambulatory (walking) ability
- To stop painful spasms
- To relax tightness that interferes with daily care (dressing and hygiene)
- To reduce tone that impairs functional ability, especially in the hand and fingers
- To create a trial of reduced tone to determine whether a patient would benefit from having a surgical procedure that will permanently change tone in a particular muscle
- To stop a pattern of behavior (such as toe walking or teeth grinding) that can lead to more serious problems

Botulinum Toxin and Phenol Block

Blocking Agent	Administered	Effectiveness	Advantages	Drawbacks	Complications
Botulinum Type A Toxin	Injected into the muscle	Lasts 12 to 30 weeks	Easy to administer Diffuses (spreads) readily in the muscle Administered without anesthesia	Effects are always temporary	No significant complications have been reported
Phenol Block	Injected into the motor points (specific nerve sites) of involved muscle	Lasts four to 12 months	Use is widely approved Lasts longer than botulinum toxin Cumulative (collective) effects from multiple treatments often occur	Can be painful May require general anesthesia Takes more skill to administer	Temporary numbness Hematomas (blood clots) may occur, which negate the effects of the treatment Very high doses of phenol could cause muscle tremor, convulsion or slowed heart rate and breathing. This possibility is extremely rare.

Make An Appointment

[651-290-8707](tel:651-290-8707)

Refer a Patient

[651-325-2200](tel:651-325-2200)

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If you are a Gillette patient with urgent questions or concerns, please contact Telehealth Nursing at [651-229-3890](tel:651-229-3890).