Spasticity is the most common abnormality of muscle tone; it is the most common form of hypertonicity, and it affects tens of thousands of patients. Untreated, it causes terrible consequences, including joint contractures and deformities, disability, and pain. Twenty years ago, the neurosurgical treatment of spasticity was essentially limited to Bischof myelotomies. Now, neurosurgeons use botulinum toxin injections, selective rhizotomies (intraspinal and peripheral), and intrathecal baclofen (ITB) to treat both focal and generalized spasticity.

The efficacy of botulinum toxin injections, selective lumbar rhizotomies, and bolus injections of ITB has been confirmed in randomized controlled clinical trials. Articles in this issue review the indications, techniques, and outcomes for the three modalities.

Numerous questions remain about each modality. For botulinum toxin injections, better data are needed about the optimal choices for the following aspects of treatment: what dose to inject; the agent’s dilution; number of sites to inject per muscle; and the appropriate duration of therapy. For selective lumbar rhizotomies, we need to know whether selective rhizotomies yield results that are superior to nonselective ones, whether the frequency of lordosis and scoliosis are significantly increased, and the frequency with which young children with spastic quadriparesis who undergo lumbar rhizotomy subsequently experience significant dystonia or other movement disorders. Questions about ITB include the duration of spasticity before a pump should be implanted (a pertinent consideration in posttraumatic spasticity); whether oral medications must fail to bring relief in patients with severe spasticity before pump implantation is considered; whether bolus screening doses are needed, given the virtually 100% response rate in patients with clear-cut spasticity; whether the frequency of scoliosis is significantly increased; and whether in many patients in whom “tolerance” to baclofen is diagnosed the catheters have in fact migrated from the subarachnoid into the subdural space.

Regardless of the modality selected, it is imperative that treatment goals be carefully identified and agreed on by the physician and the patient before treatment commences. “Reducing spasticity” per se is not an appropriate treatment goal. Appropriate goals are more likely to include increasing range of motion, easing care, decreasing pain, improving quality of life, improving gait, or decreasing the development of contractures.

The procedures used to treat spasticity are relatively straightforward and lack the technical challenges of aneurysm clip occlusion or tumor resection, but their effects on the quality of life and function in these patients can be as dramatic as the effects of any neurosurgical operation.

Treatment of spasticity

Tae Sung Park, M.D., and Leland Albright, M.D.

St. Louis Children’s Hospital, St. Louis, Missouri; and Children’s Hospital of Pittsburgh, Pennsylvania

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