



MSRCNY

# LONG-TERM INTRATHECAL BACLOFEN THERAPY IN AMBULATORY MULTIPLE SCLEROSIS PATIENTS

James W. Stark, MD, Armistead D. Williams, MD and Saud A. Sadiq, MD

Multiple Sclerosis Research Center of New York

## INTRODUCTION

Spasticity is a common clinical feature of multiple sclerosis (MS). Mild to moderate spasticity can be effectively managed with physical therapy as well as oral medications such as baclofen, tizanidine, benzodiazepines and anticonvulsants. Chemodenervation and surgical options are also available and effective for focal spasticity. However, in moderate to severe spasticity the use of oral agents is limited by significant side effects, including sedation, dizziness and weakness.

Intrathecal baclofen (ITB) is an FDA-approved treatment for severe spasticity. With surgical implantation of a programmable pump, ITB can be delivered at a constant rate directly to the cerebrospinal fluid (CSF), thereby bypassing systemic metabolism as well as circumventing the blood-brain barrier. As a result, much smaller doses of medication are required, (on the order of 1000 times less), tolerability is improved and therapeutic response is enhanced.

In patients with underlying muscle weakness, there is concern that aggressive spasticity treatment can lead to further muscle weakness and impairment in functioning and activities of daily living. This is especially relevant to patients who retain the ability to ambulate. However, the greatest functional gains in the treatment of spasticity are likely to be early in the disease process, prior to the development of intractable spasticity. The current study reports on our center's experience with intrathecal baclofen in ambulatory MS patients.

## METHODS

Thirty-six ambulatory MS patients with severe spasticity, unresponsive or intolerant to oral medications, were screened for a response to ITB with a bolus dose (50-75 mcg) administered via lumbar puncture. Ambulation for the purposes of this study was defined as the ability to walk at least 25 feet with or without the use of an assistive device. Screening was considered successful if there was a reduction of greater than one point on the Ashworth scale for spasticity assessment. Those patients with a successful response underwent surgery for implantation of a programmable pump, which allows for continuous infusion of ITB. Pump rate and baclofen concentration were adjusted over time as clinically warranted. Patients were followed after implantation from 1 to 10 years for ambulatory status, adverse events and quality of life assessment.

## RESULTS

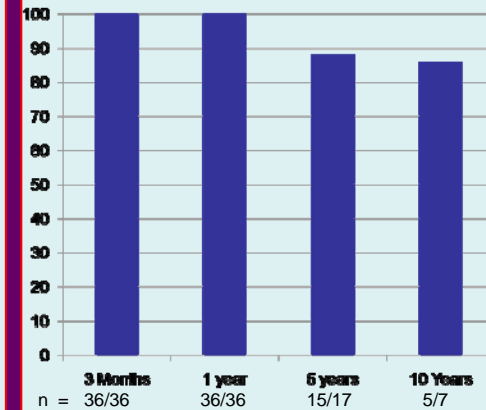
All 36 patients had decreased spasticity and retained ambulatory function immediately post-implantation. All patients were able to wean off traditional anti-spasticity medications and reported resolution of various side effects. All patients retained ability to ambulate at one year. Eventually, three patients became wheelchair dependent, related to progression of their MS.

Ten patients had replacement surgery because of the pump's five year battery life. Two patients had pump replacement because of infection. Catheter malfunction led to replacement in one patient.

## Ambulatory Status Pre and Post Surgery

	Preop	3 months	1 year	5 years
P01	cane	cane	walker	wheelchair
P02	cane	cane	cane	cane
P03	2 crutches	2 crutches	2 crutches	2 crutches
P04	walker	walker	walker	
P05	walker	walker	walker	walker
P06	walker	walker	walker	
P07	2 crutches	2 crutches	2 crutches	2 crutches
P08	cane	cane	cane	
P09	cane	walker	cane	cane
P10	no device	no device	no device	
P11	2 crutches	2 crutches	2 crutches	2 crutches
P12	no device	cane	no device	
P13	walker	walker	walker	
P14	walker	walker	walker	
P15	cane	no device	no device	
P16	walker	wheelchair	walker	
P17	walker	walker	walker	
P18	walker	walker	walker	walker
P19	2 crutches	2 crutches	2 crutches	
P20	walker	walker	walker	walker
P21	one crutch	one crutch	one crutch	
P22	walker	walker	cane	
P23	walker	walker	walker	
P24	walker	walker	walker	walker
P25	walker	walker	walker	
P26	2 crutches	2 crutches	2 crutches	2 crutches
P27	one crutch	walker	walker	wheelchair
P28	walker	walker	walker	
P29	walker	one cane	walker	
P30	walker	walker	walker	walker
P31	walker	walker	walker	walker
P32	cane	cane	cane	cane
P33	walker	walker	walker	
P34	walker	walker	walker	
P35	walker	walker	walker	walker
P36	walker	walker	walker	walker

## Percent Patients Remaining Ambulatory\*



\* Percentage of the number of patients who have undergone treatment for that duration of time

## CONCLUSIONS

- 1.ITB is a safe and effective therapy in selected patients with severe muscle spasticity secondary to multiple sclerosis.
- 2.All patients discontinued oral anti-spasmodics and had relief of side effects.
- 3.ITB therapy was not associated with loss of ambulation following pump implantation or initial medication titration.
- 4.Some patients eventually became non-ambulatory secondary to underlying disease progression.

## DISCLOSURE

Dr. Sadiq has received research funding from Medtronic.