Editorial

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# Intrathecal Baclofen Therapy: Pros and Cons

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Intrathecal baclofen (ITB) therapy is known to directly control spasticity in the spinal cord with fewer systemic adverse effects in a variety of neurological diseases including spinal cord injury, cerebral palsy (CP), stroke, traumatic brain injury, and hypoxic brain injury [1-4]. ITB therapy can effectively reduce severe spasticity that does not respond to oral medications or botulinum toxin treatment [5,6]. In addition, ITB therapy is reversible and continuously controls spasticity, whereas orthopedic musculoskeletal surgery and selective posterior rhizotomy are irreversible [7,8].

Previous experience with ITB screening tests (Table 1) showed beneficial effects such as spasticity reduction, improved sitting posture and sleep pattern, and decreased excessive sweating and chronic pain [8]. However, it can cause adverse effects, such as headache, dizziness, drowsiness, nausea, vomiting, dysarthria, posterior neck pain, voiding difficulty, and respiratory depression, aside from surgical or catheter-related complications [9-13].

In other issues, spasticity reduction not only induces functional improvement but also causes functional impairments due to muscle hypotonia and instability in walking and standing [9]. I actually experienced that ambulatory patients with CP showed standing impairment or gait disturbance after ITB bolus injection [8]. Therefore, confirming functional changes via ITB test trials is necessary to reduce spasticity without functional impairments before ITB pump implantation [8,14].

I also experienced reversible adverse effects, such as headache, drowsiness, and decreased sitting balance after ITB pump implantation, in which symptoms were relieved after adjusting the infusion dose and maintaining an appropriate dose to maximize the beneficial effects while minimizing the negative events [8,15]. Recent studies have suggested that early exposure to ITB therapy is appropriate to prevent musculoskeletal deformities and contracture [16] and participate in active rehabilitation programs [17] in contrast to the conventional concept that ITB pump implantation should be delayed for over 1 year post-onset. Patients with severe spasticity should consider early application of ITB therapy to decrease caregiver burden, prevent complications, and eventually improve function.

However, the impact on scoliosis after ITB pump implantation has been controversial in children with CP with further scoliosis progression [18-20] vs. no significant difference [21,22]. In their study published in current issue of *Annals of Rehabilitation Medicine*, Lee et al. [23] performed a systematic review and meta-analysis

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**Table 1.** Outcomes of the intrathecal baclofen therapy screening tests

| Positive effects | Negative effects |
|---|---|
| Decreased spasticity | Muscle hypotonia |
| Decreased dystonic movement | Standing or gait disturbance |
| Decreased chronic pain | Headache, posterior neck pain |
| Decreased excessive sweating | Dizziness, drowsiness |
| Improved sitting posture | Nausea, vomiting |
| Improved sleep pattern | Voiding difficulty |
| Improved dysarthria | Dysarthria |
| | Respiratory depression |

which showed that ITB pump implantation accelerates annual Cobb's angle progression in children with CP. Patients with ITB pump implantation showed a faster rate of scoliosis progression probably due to paraspinal muscle hypotonia, although patients with no ITB pump implantation also showed aggravation of scoliosis. Severe scoliosis might negatively affect sitting or standing posture and activities of daily living, causing caregiver burden [24-26].

Nonetheless, spinal curvature can be managed using an inner seat system because scoliosis progression is not an unpredictable phenomenon when ITB therapy reduces paraspinal muscle spasticity and hypertonia. In contrast, ITB therapy may decrease hip adductor spasticity, pelvic obliquity, and hip subluxation or dislocation, presumably alleviating scoliosis acceleration and perineal care burden. Therefore, the results of this meta-analysis should be carefully interpreted, and advantages and disadvantages of ITB therapy should be carefully considered before ITB pump implantation.

## CONFLICT OF INTEREST

Sung-Rae Cho is a Section Editor of Annals of Rehabilitation Medicine. The author did not engage in any part of the review and decision-making process for this manuscript. Otherwise, no potential conflict of interest relevant to this article was reported.

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