

Botulinum Toxin Injections in Post Stroke Spasticity

Introduction

Stroke may cause an abnormal increase in muscle tone; muscles may become stiff, tighten up and resist stretching, leading to spasticity. Spasticity is a physiological consequence of neurological injury, potentially causing profound disability in combination with other features of an upper motor neurone syndrome.

Prevalence

Spasticity is estimated to occur in almost 25% of patients within 2 weeks post-stroke. However, after 12 months, the overall prevalence of spasticity increases to 38% in patients surviving a first stroke and 44% for those with recurrent stroke admissions. Severe or disabling spasticity has been reported in approximately 15% of post-stroke patients.

Clinical presentation

In the upper extremities, spasticity can cause the following abnormal posture leading to pain, reduce functions and increase carers' burden:

- Adducted and internally rotated shoulder (tight shoulder)
- Flexed elbow and wrist (bend elbow and wrist)
- Pronated forearm
- Clenched fist with thumb-in-palm position

Everyday tasks such as overhead activities, reaching forward and grasping for objects, taking care of personal hygiene become a challenge.

In the lower limbs, transferring or walking becomes harder when the legs are affected; thus increase risks of falling and fall related injuries. Common clinical patterns in the lower limbs are:

- Adducted thigh
- Flexed or hyperextended knee
- Equinovarus causing foot drop
- Claw toes

Management

If left untreated, spasticity can cause permanent shrinking and contracting of the muscles, along with joints locked into single positions. Treatment plan is individualised, and goals driven. A combination of physical therapies and medications can be effective.

Regular exercises and stretching can help ease the tightness, maintaining the range of motion and prevent shortening of muscles. Physiotherapists can recommend exercises to strengthen

the muscles, mobility aid reviews, balance and gait retraining. Occupational therapists can assist with functional and equipment reviews, development of new skills for activities of daily living (modified ways of performing tasks) thus making life easier and safer.

Oral antispasmodic medications such as baclofen, tizanidine and dantrolene provide a systemic effect for generalised spasticity. They are useful for more widespread spasticity of modest severity, but maximal efficacy may be limited by sedation, muscle weakness or liver toxicity.

Intramuscular botulinum toxin injections under ultrasound or EMG guidance is effective treatment modality for focal spasticity commonly seen in stroke survivors or brain injuries related spasticity. It involves initial neurological and functional assessment by rehabilitation medicine specialist or neurologist; followed by discussion about goals that the patients hope to achieve with the intervention. Botulinum toxin A injections should always be combined with exercises set by physiotherapists or occupational therapists. This can be performed at Sunnybank Private Hospital Consulting Suite under ultrasound guidance in the outpatient setting and further follow ups.

Early identification and treatment of at-risk patients will increase their quality of care and help improve function, increase independence and avoid long-term complications.