

Spasticity

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HEALTH

I have nothing to disclose but I will be
discussing the use of off label
medications.

DISCLAIMER

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Spasticity is a motor disorder characterized by a velocity-dependent increase in tonic stretch reflexes (muscle tone) with exaggerated tendon jerks resulting from hyperexcitability of the stretch reflex component of the upper motor neuron.

Lance 1980

Spasticity is disordered sensorimotor control resulting from an upper motor neuron lesion presenting as an intermittent or sustained involuntary activation of muscles.

Pandyan et al 2005

Epidemiology

- 35% Post Stroke
- >90% Cerebral Palsy
- 50% Traumatic Brain Injuries
- 40 % Spinal Cord Injuries
- 37%-78% Multiple Sclerosis

Modified Ashworth Scale

- 0 No increase in muscle tone
- 1 Slight increase in muscle tone, manifested by a catch and release or by minimal resistance at the end of the ROM when the affected part is moved in flexion or extension
- 1+ Slight increase in muscle tone, manifested by a catch, followed by minimal resistance throughout the remainder (less than half) or the ROM
- 2 More marked increase in muscle tone through most of the ROM, but affected part easily moved
- 3 Considerable increase in muscle tone, passive movement difficult
- 4 Affected part rigid in flexion or extension

Upper Extremity

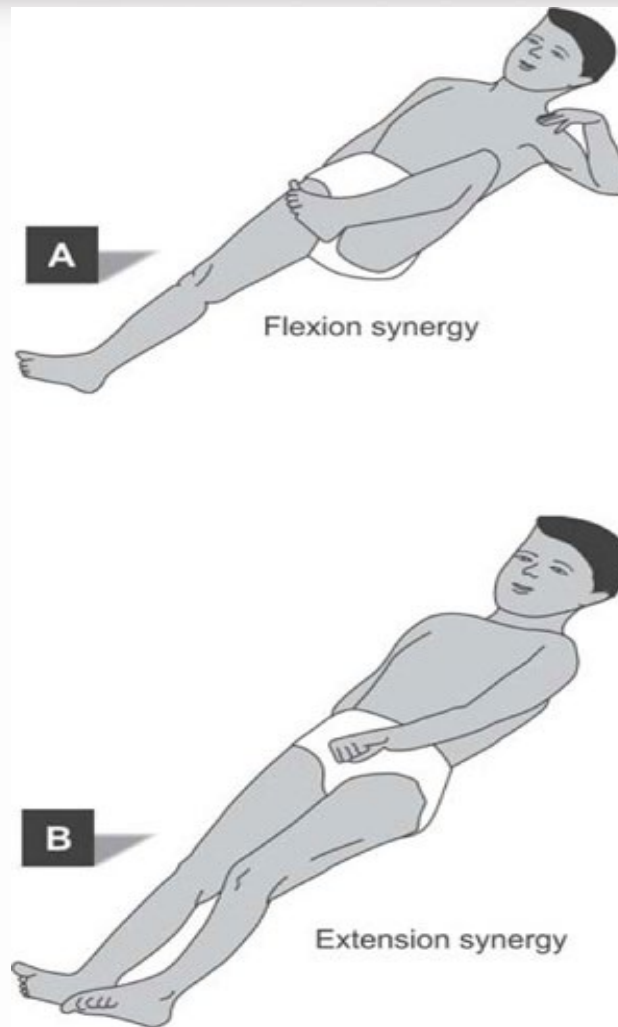
Spasticity and Shoulder Pain



FLEXOR SYNERGY PATTERN

- Where the arm is held tight and close to the chest
- Pain with attempted movement or stretching
- Secondary complications of frozen shoulder, permanent loss of range of motion, difficulty with hygiene, dressing, balance

Synergy Patterns



Treatment

- Therapies
- Modalities
- Medications
- Toxins
- Surgery

- Physical Therapy
- Occupational Therapy
- Home Stretching Programs

Modalities

- Heat
 - Moist Hot Packs
 - Ultrasound
 - Dry Heat (Corn Husks)
 - Paraffin Bath
- Cold



- Splinting
- Casting
- Bracing

Splinting



Serial Casting



Tone Reduction Foot Plate



Dynamic Splint





Medications

- Baclofen
- Tizanidine
- Diazepam /Clonazepam
- Dantrolene
- Gabapentin

Baclofen

- Oral
 - Dose up to 80-120 mg/day divided 3-4 times a day
- Intrathecal
 - Requires an implanted pump for delivery.
 - Pump is programmable
 - Avoids some side effects of oral dosing

Tizanidine

- Dose up to 32 mg/day in 4 divided doses
- Comes in 4 mg scored tablets for easy dosing

Diazepam

- Benzodiazepine
- Longer acting
- Often used at night

Dantrolene

- Up to 400 mg/day divided 4 times a day
- Caution use in females and Caucasians due to liver toxicity

Gabapentin

- Adjust dose based on renal function

Cannab inoids

- Edible s
- Vap in g
- Cream s

Cuccurullo,Sara, Physical Medicine and Rehabilitation Board Review 4th ed, Spasticity, pgs 853-866, 2020.



Onabotulinatoxins A and B

- Onabotulinum toxin A, Botox
- Abobotulinum toxin A, Dysport
- Incobotulinum toxin A, Xeomin
- Rimabotulinum toxin B, Myobloc

Nerve Blocks

- Obturator com m only done

Phenol

- True neurolytic agent and must be applied to the nerve

Surgery

- Tendon lengthening
- Tendon transfers
- Selective dorsal rhizotomy

Increase Spasticity

- Skin
- Bladder/Bowel
- Pain/Discomfort
- Seating
- Fatigue
- Infections
- Stress
- Menstruation
- Disease progression

References

- Cifu, David, Braddom's Physical Medicine and Rehabilitation 6th ed, Spasticity, pgs 447-468, 2015
- Cuccurullo, Sara, Physical Medicine and Rehabilitation Board Review 4th ed, Spasticity, pgs 853-866, 2020.
- Lance, J. W., The Control of Muscle Tone, Reflexes and Movement; Robert Wartenberg Lecture. Neurology 1980; 30: 1303-13.
- Lexicomp Drug References
- Pandyan, A.D. et al. Spasticity: Clinical Perceptions, Neurological Realities and Meaningful Measurement; Disability and Rehabilitation, 2005; 27(1/2): 2-6.

