

“The Hidden Side of Stroke”

Pain Management & Spasticity

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AIMS of Lecture

2 common “invisible” problems after stroke.....

- What is pain?
- What are the different types of pain after stroke?
- Treatment of pain?

- What is spasticity?
- What causes it?
- How do we treat it?

PAIN

“An unpleasant sensory and emotional experience with actual or potential tissue damage or one that is described in such terms.”

[International Association for the Study of Pain]

PAIN: How common is it?

Gamble et al 2002: 40% pain in affected side within 6m after stroke

Lindgren et al 2007: 22% of patients had moderate to severe shoulder pain in the year following stroke

Types of Pain after a stroke

- Regional Pain
- Central post stroke pain
- Complex regional pain syndrome



Regional (Hemiplegic) Shoulder Pain

152 patients followed from 2 weeks to 6 months

34% developed regional shoulder pain

28% of these within 2 weeks

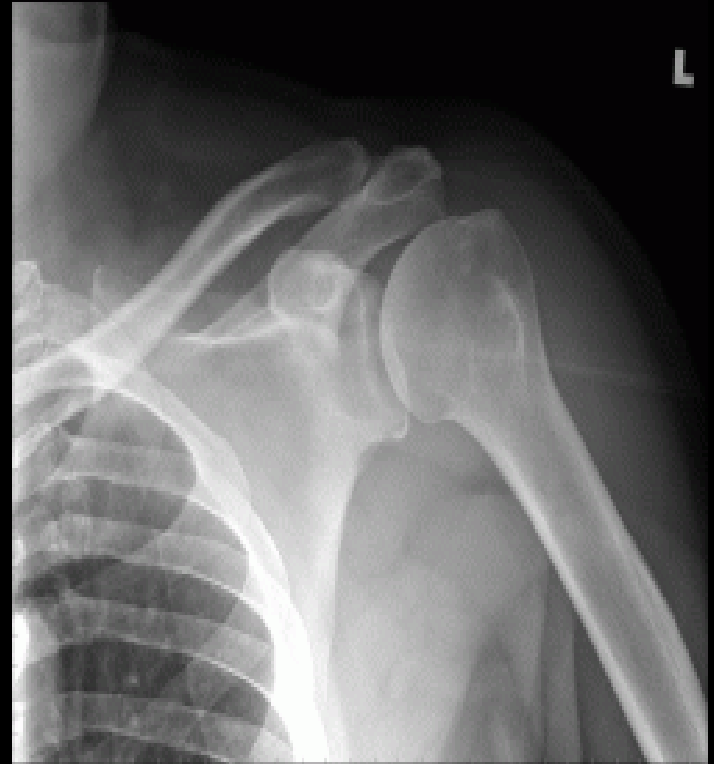
Musculoskeletal imbalances around shoulder joint

Regional shoulder pain

- Rotator cuff trauma
- Inflammation
- Subluxation/Dislocation

“Frozen shoulder”

Shoulder x-ray of little value

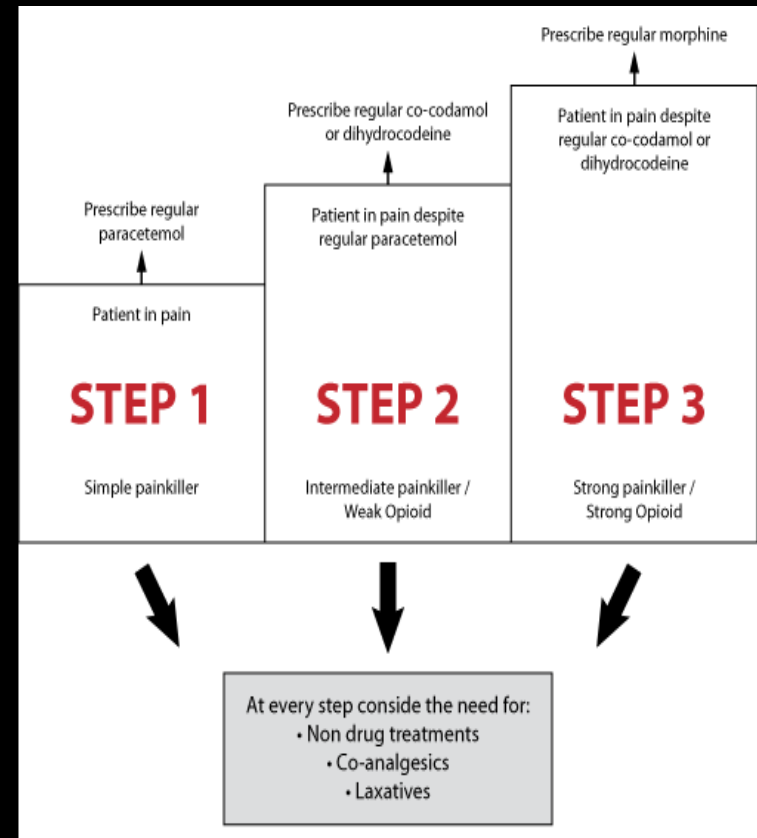


Predictors of regional shoulder pain

- Motor loss
- Sensory loss
- Low mood
- Pre-stroke history of shoulder pain

Management of Post Stroke Shoulder Pain

- Prevention
- Positioning
- Mobilisation
- Appropriate analgesia
- Joint injection: local anaesthetic + steroids



80% improve/resolve

Central Post Stroke Pain

Neuropathic pain: arising damage to neurons. Electrical short circuiting/irritability.
In absence of peripheral tissue damage

Delay after onset of stroke (months, years)

10% of patients with stroke

Neuropathic pain

Burning

Icy

Lancinating

Lacerating

Shooting

Stabbing

Clawing

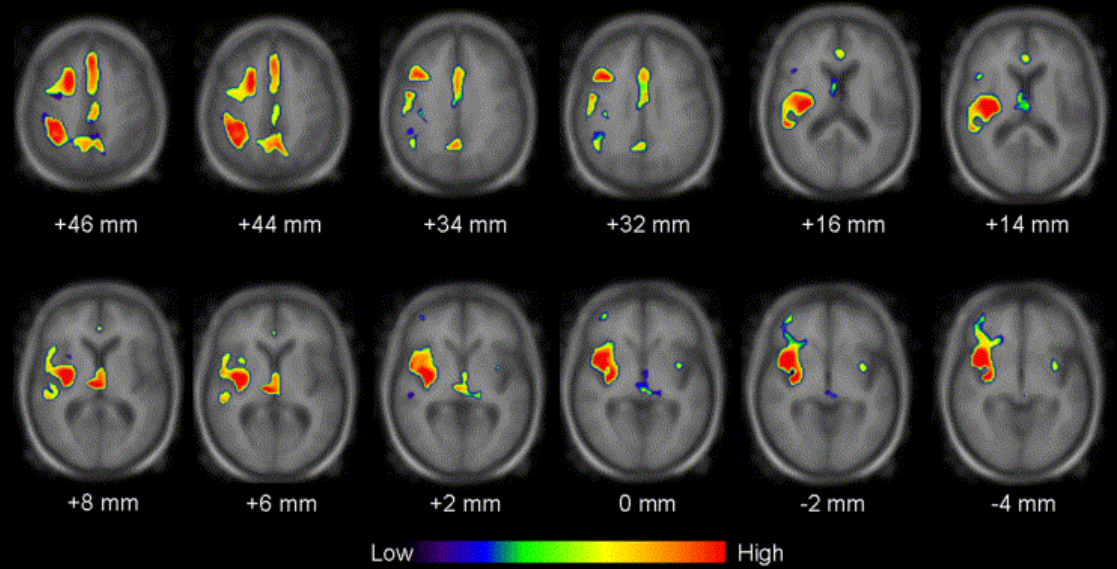
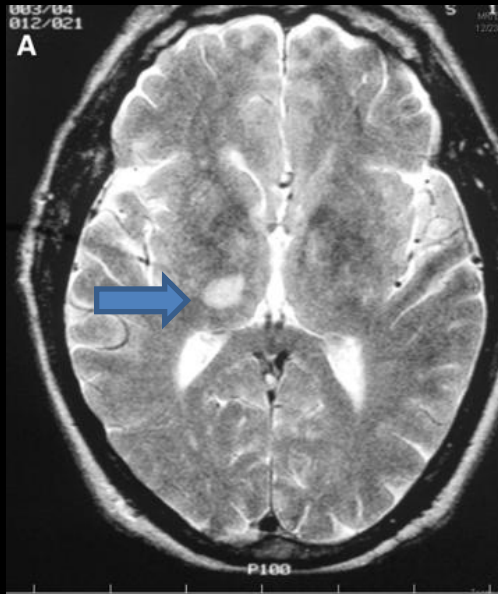
Associated features

Loss of temperature sensation

Extreme sensitivity to touch

Sleep disturbance

Depression

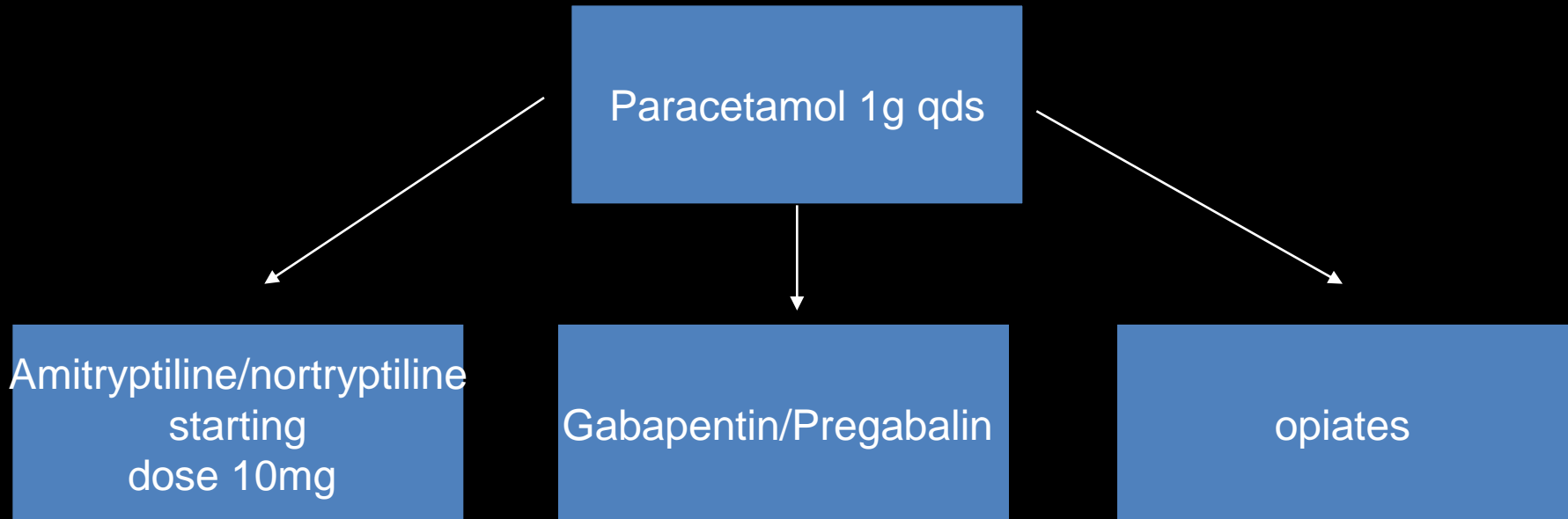


Thalamic Strokes (60%)

“Thalamic Syndrome”

Can occur in any stroke

Management of Post stroke CPSP



If inadequate response consider alternatives or combination therapy

How Pain Killers Work?

Steroids/Anti-inflammatory Drugs

Dampen down Immune system [release of pain activating substances]

Opiates [e.g codeine, morphine]

Activate opiate receptors which regulate pain transmission in the central nervous system and brain

Anticonvulsants/Antidepressants

Dampen down unwanted electrical activity in nervous system

Basis of neuropathic pain

May take several days/weeks to have benefit

Non Pharmacological Approaches to Neuropathic Pain

Transcutaneous Electrical Stimulation (TENS)

Small electric currents passed through electrodes attached to skin.

Block signals being sent from nerves in the affected area. It is used for short bursts several times during the day

Spinal cord
Deep Brain
Motor Cortex } Stimulation

Electrodes implanted into central nervous system



Complex Regional Pain Syndrome (CRPS)

Severe shoulder/hand pain + swollen hand

Usually develops >1 month after stroke

Hand temperature/sweating affected

Exquisitely sensitive

Changes in nails/skin

Causes unknown:

- Malfunctioning pain pathways

- Autonomic nervous system

- Limited limb movement



Treatment: difficult: Neuropathic pain meds: mobilise limb early

Principles of post stroke pain management

Early recognition, intervention and management – better outcomes

MDT approach – positioning, therapy, medications, alternative/complementary

Sensory examination e.g. temperature, feeling

Mood screening and treat as necessary

May need antidepressant treatment in addition to low dose tricyclic

Early specialist intervention

Post stroke pain clinic (stroke nurse/rheumatology)

Risk factors awareness

Accurate history

Holistic approach

Patient and carer education

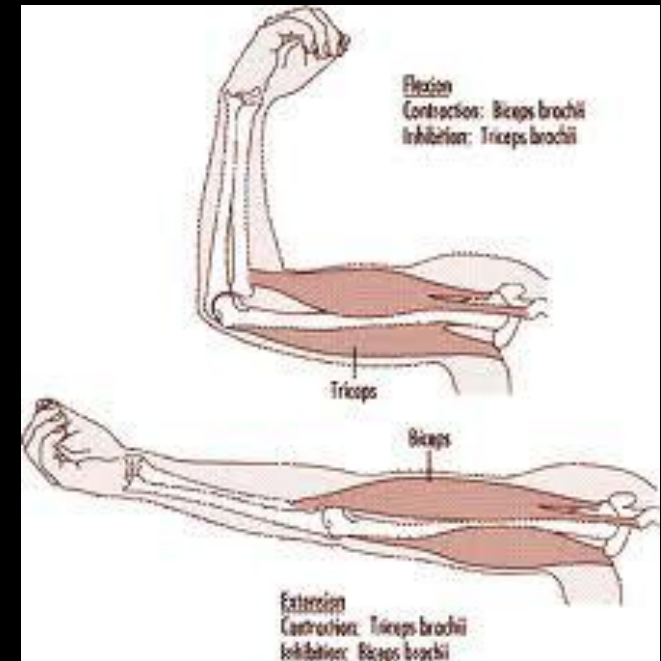
SPASTICITY (increased muscle tone)

= Constant, unwanted contraction of muscle groups

Exaggerated stretch reflex

Loss of inhibitory control by brain

Increased tightness: restricts movement/ muscle imbalances





Develops in 1st week of stroke
20%

Complications:

Positioning

Hygiene

Sitting or Standing Balance

Contractures

Loss of Function (ADLs)



Treatment Goals

- Improvements in position
- Mobility
- Pain
- Contracture prevention
- Hygiene
- Function/mobility (?)

Spasticity: Management Steps

Address Pain

Physiotherapy/Occupation therapy

- Positioning techniques (prevent abnormal postures)
- Splinting/casting (prevent contractures)
- Exercise program

Passive Stretching

Targeted contraction of muscles

Muscle strengthening techniques



Spasticity: Management Steps

- Oral medications
- Botox injections
- Orthopaedic procedures
- Intrathecal medications

Oral Medications

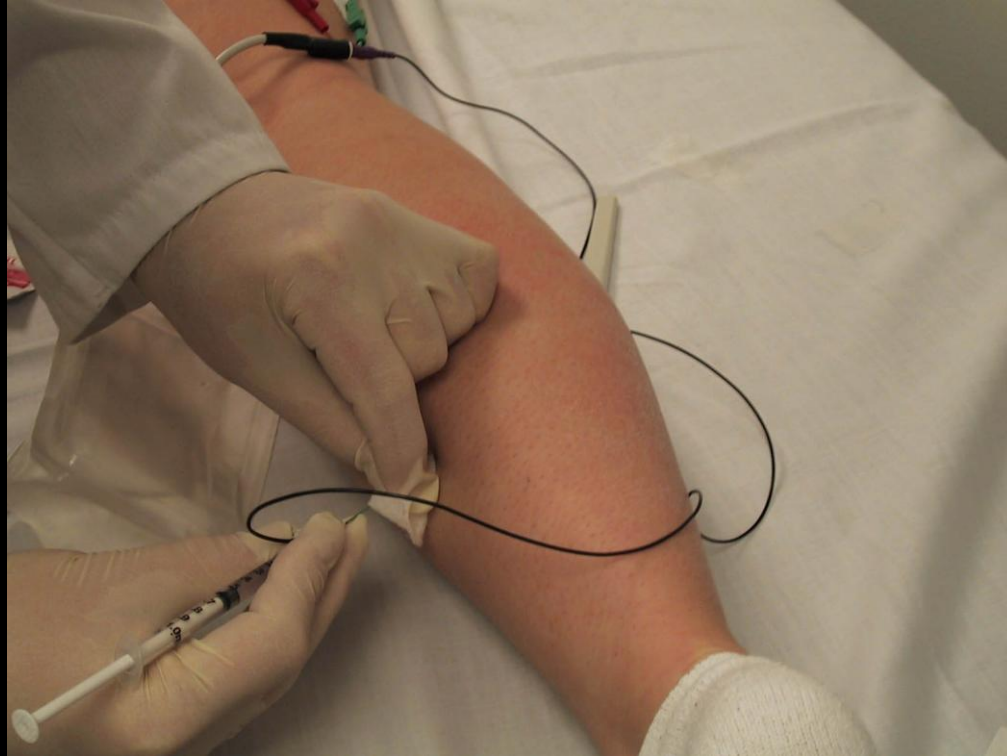
- **Tizanadine**
 - Adverse effects: **drowsiness**, dizziness, dry mouth, orthostatic hypotension
- **Baclofen**
 - Adverse effects: weakness, **sedation**, hypotonia, ataxia, confusion, fatigue, nausea, dizziness, lower seizure threshold
 - Sudden withdrawal may cause seizures, hallucinations, rebound spasticity
- **Gabapentin**
 - Adverse effects: weight gain, lethargy
- **Dantrolene**
 - Adverse effects: weakness (including ventilatory muscles), **drowsiness**, lethargy, nausea, diarrhea, Liver toxicity

BOTOX[®] (Botulinum Toxin A)

- Injected directly into overactive muscles
- Reduces contractions, relaxes muscles
- Advantages of local injection
 - Targeted to specific muscles that are causing the symptoms
 - When used at recommended doses, avoids systemic, overt distant clinical effects
 - Effects last approx 3 months



Muscle Identification



Side Effects

Localized

Bleeding and bruising are seen regardless of the site injected

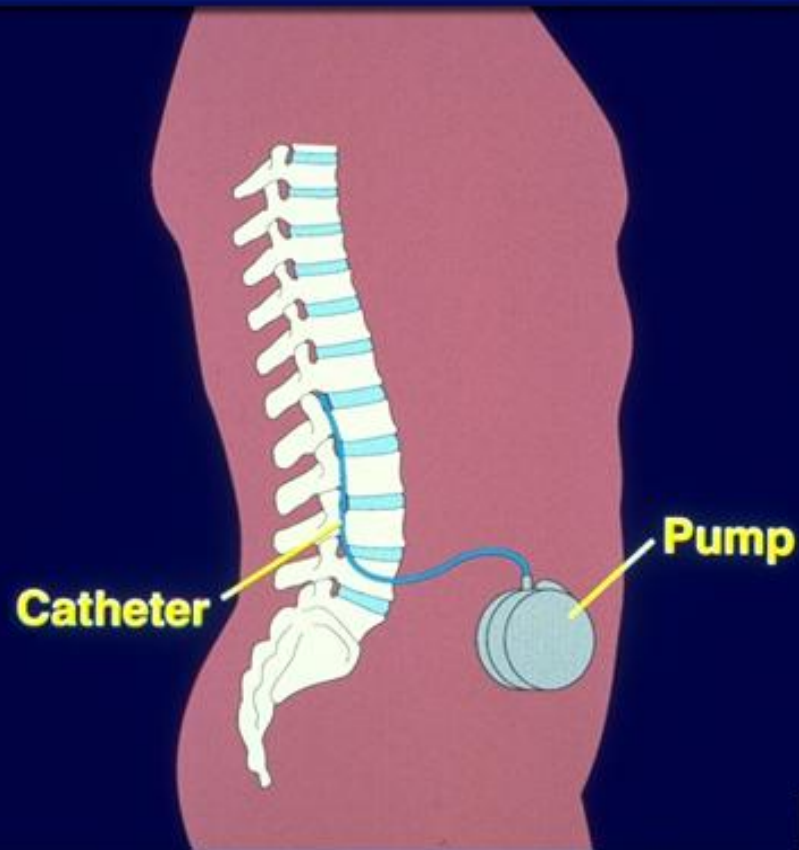
Local weakness, created by diffusion of Botox and is site specific

Death???

Intrathecal Baclofen

- Small doses of baclofen delivered directly to the spinal canal
- Fewer side effects, better relief of spasticity
- Usually more effective for spasticity in the lower extremities
- Requires committed patient and family, pump must be refilled every 3 months.

Intrathecal Baclofen Pump



Surgical Procedures

- Tendon lengthening
- Neurosurgical procedures
- Last resort!

Take Home Messages

Pain and spasticity common complications post stroke

Potentially important in causing disability

Easy to miss if not trained to spot

Can be addressed by multi-disciplinary stroke team