Phantom limb pain patients with Breast cancer: Updates in rehabilitation paradigms

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Introduction

By using current evidence-based practice mechanisms of pain or pain phenotypes, we can better select candidates for appropriate interventions within oncology rehabilitation. Using subjective and objective assessment criteria for identifying candidates for nocioplastic treatment can result in better treatment outcomes for persistent pain in this traditionally recalcitrant patient population. This has been explored in the context of populations with amputation and CRPS and has yet to be approached within physical therapy in oncology.

Methods and Materials

Case Study of 65 year old female with L intraductal carcinoma s/p partial mastectomy with SLNB (1/2025) and now ER/PR+ HER2- invasive lobular carcinoma of R breast s/p R total mastectomy with SLNB (1/2/25 0/6 +LN) Post op complications of seroma and soft tissue infection Pertinent past medical history includes: Anxiety, Depression, Osteoporosis, and DM II with AIC 6.1.

Purpose

To demonstrate application of nocioplastic assessment and treatment within the realm of physical therapy, oncology specialized practice.

Subjective:

- Disproportionate, non-mechanical, unpredictable pattern of pain provocation in response to multiple/non-specific aggravating/easing factors.
- Pain persisting beyond expected tissue healing/pathology recovery times.
- Pain disproportionate to the nature and extent of injury or pathology.
- Widespread, non-anatomical distribution of pain.
- History of failed interventions (medical/surgical/therapeutic).
- Strong association with maladaptive psychosocial factors (e.g. negative emotions, poor self-efficacy, maladaptive beliefs and pain behaviours, altered family/work/social life, medical conflict).
- Unresponsive to NSAIDS and/or more responsive to anti-epileptic (e.g. Lyrica) /anti-depressant (e.g. Amitriptyline) medication.
- Reports of spontaneous (i.e. stimulus-independent) pain and/or paroxysmal pain (i.e. sudden recurrences and intensification of pain).
- Pain in association with high levels of functional disability.
- More constant/unremitting pain.
- Night pain/disturbed sleep.
- Pain in association with other dysesthesias (e.g. burning, coldness, crawling).
- Pain of high severity and irritability (i.e. easily provoked, taking a long time to settle).

Clinical examination:

- Disproportionate, inconsistent, non-mechanical/non-anatomical pattern of pain provocation in response to movement/mechanical testing.
- Positive findings of hyperalgesia (primary, secondary) and/or allodynia and/or hyperpathia within the distribution of pain.
- Diffuse/non-anatomic areas of pain/tenderness on palpation.
- Positive identification of various psychosocial factors (e.g. catastrophisation, fear-avoidance behaviour, distress).

Figure 1. Nocioceptive pain

Subjective:

- Pain variously described as burning, shooting, sharp, aching or electric-shock-like.
- History of nerve injury, pathology or mechanical compromise.
- Pain in association with other neurological symptoms (e.g. pins and needles, numbness, weakness).
- Pain referred in a dermatomal or cutaneous distribution.
- Less responsive to simple analgesia/NSAIDS* and/or more responsive to anti-epileptic (e.g. Neurontin, Lyrica)/anti-depression (e.g. Amitriptyline) medication.
- Pain of high severity and irritability (i.e. easily provoked, taking longer to settle).
- Mechanical pattern to aggravating and easing factors involving activities/postures associated with movement, loading or compression of neural tissue.
- Pain in association with other dysesthesias (e.g. crawling, electrical, heaviness).
- Reports of spontaneous (i.e. stimulus-independent) pain and/or paroxysmal pain (i.e. sudden recurrences and intensification of pain).

Clinical examination:

- Pain/symptom provocation with mechanical/movement tests (e.g. Active/Passive, Neurodynamic, i.e. SLR#, Brachial plexus tension test) that move/load/compress neural tissue.
- Pain/symptom provocation on palpation of relevant neural tissues.
- Positive neurological findings (including altered reflexes, sensation and muscle power in a dermatomal/myotomal or cutaneous nerve distribution).
- Antalgic posturing of the affected limb/body part.
- Positive findings of hyperalgesia (primary or secondary) and/or allodynia and/or hyperpathia within the distribution of pain.

*Non-steroidal anti-inflammatory drugs.
#Straight leg raise.

Figure 2. Neuropathic pain

Subjective:

- Disproportionate, non-mechanical, unpredictable pattern of pain provocation in response to multiple/non-specific aggravating/easing factors.
- Pain persisting beyond expected tissue healing/pathology recovery times.
- Pain disproportionate to the nature and extent of injury or pathology.
- Widespread, non-anatomical distribution of pain.
- History of failed interventions (medical/surgical/therapeutic).
- Strong association with maladaptive psychosocial factors (e.g. negative emotions, poor self-efficacy, maladaptive beliefs and pain behaviours, altered family/work/social life, medical conflict).
- Unresponsive to NSAIDS and/or more responsive to anti-epileptic (e.g. Lyrica) /anti-depressant (e.g. Amitriptyline) medication.
- Reports of spontaneous (i.e. stimulus-independent) pain and/or paroxysmal pain (i.e. sudden recurrences and intensification of pain).
- Pain in association with high levels of functional disability.
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Clinical examination:

- Disproportionate, inconsistent, non-mechanical/non-anatomical pattern of pain provocation in response to movement/mechanical testing.
- Positive findings of hyperalgesia (primary, secondary) and/or allodynia and/or hyperpathia within the distribution of pain.
- Diffuse/non-anatomic areas of pain/tenderness on palpation.
- Positive identification of various psychosocial factors (e.g. catastrophisation, fear-avoidance behaviour, distress).

Figure 3. Nocioplastic pain

Results

Subjective complaints include:
P1: chest “tightness”
P2: inability to touch or look at scar
P3: Fatigue 5-10/10
P4: Short term memory impairments

Pt goal: “get bump to go away”.
Nocioplastic descriptors include: Strong association with psychosocial factors, pain associated with high levels of functional disability, severity and irritability, and hyperalgesia.

Objective measures:
Grip strength in lbs: R 35,30,35 30 L 40, 55,45
Shoulder flexion AROM R 120 L 135 abduction 91, 155 Shoulder Apley’s Scratch IR/ER WNL. Non capsular pattern noted.
Integumentary: 30 cm latitudinal scar R anterior breast with increased tissue tension noted, 4cm inferior latitudinal scar on L anterior breast both well healed
Edema 1+ on trunk
Circumferential girth measurements on UE grossly symmetrical.

Quick DASH: 27.27

	Initial eval	First follow up	Second follow up
Subjective	Attempted STM, Request to hold hands on treatment	hasn’t been able to look at breast	ability to look and touch scar
Treatment	Goal setting	TNE, Laterality training	Shoulder mobility exercises
Laterality		45s/8 item 5.5s/item	16s/8 item 2s/item
Shoulder AROM	R shoulder flexion 120 to 110	R shoulder abduction 91 to 95	

Chart 1. Outcomes over three visits

Discussion

Noted improved laterality, and shoulder AROM intrasession and functional subjective outcomes intersession noted by subjective report after nocioplastic specific interventions.

Conclusions

. By treating the central component of pain regarding mastectomy and subsequent current standard of practice for breast cancer, we mitigate impairments more effectively. The prospective surveillance model to impact known impairments, functional activity limitations, and participation limitations could adopt this assessment in at risk populations within the oncology sector.

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