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BREAST CANCER SUPPORTIVE CARE

EDUCATIONAL SYMPOSIUM

COMMON POST-BREAST CANCER TREATMENT PROBLEMS: CIPN & POST-SURGICAL PAIN

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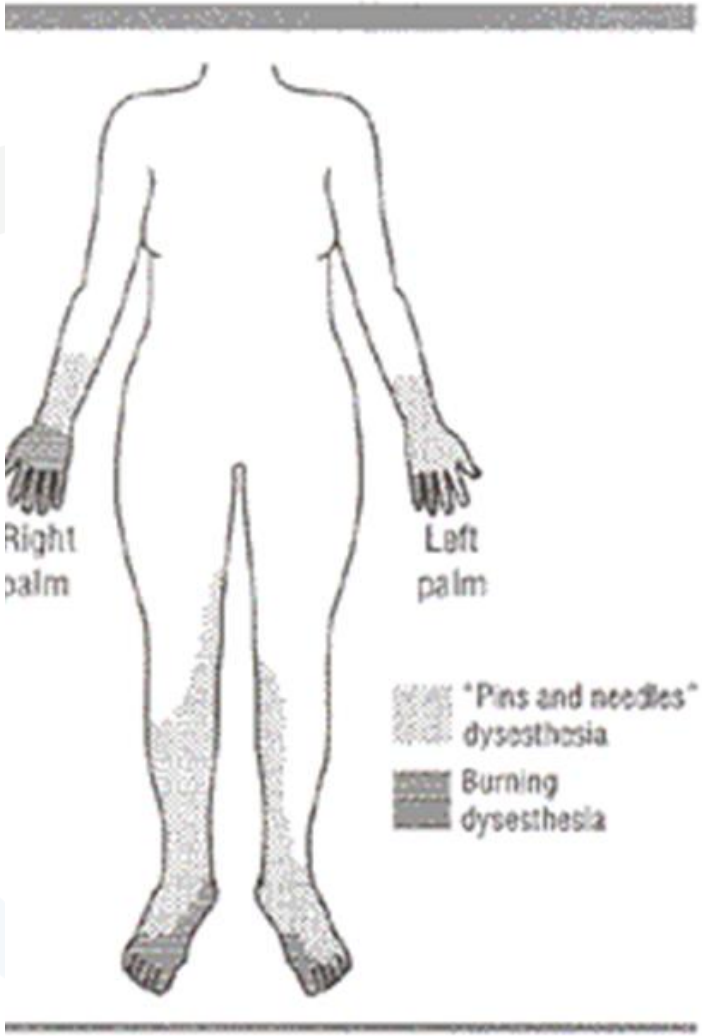
Chemotherapy-induced neuropathy

CIPN is a potential side effect in any patients receiving neurotoxic chemotherapy:

- CIPN has sensory, motor and autonomic components
  - Acute ie during chemotherapy cycles, often maximal at the time of the infusion
  - Chronic ie persistent after 3 months post last chemotherapy
  - Patients will often say it is not painful, but is very annoying/distressing



Acute CIPN

- Has a predominance of sensory components
- Often complaint of intensely unpleasant sensations rather than pain
- Can be misleading if the clinician only asks about pain
- In acute CIPN we can see associated joint pains thought to be due to neurotoxicity affecting the synovial lining of joints.

Chronic CIPN

- Can be predominantly sensory, or any mixture of sensory, motor and autonomic
- Is defined as lasting for at 3 months post chemotherapy
- Not all acute CIPN goes on to chronic CIPN and similarly not all chronic CIPN is preceded by acute CIPN

After completion of chemotherapy, existing CIPN can go through a period of deterioration over 3-4 months which is known as **coasting**.

At the 3-4 month period there is usually a stabilisation and in roughly 50% of patients a gradual improvement over a year.

The remaining 50% will have some level of unacceptable CIPN a year after finishing chemotherapy.

Our systematic review[1] and meta-regression suggests a high overall prevalence of CIPN, maximum within the first month after treatment, and falling over time.

Overall, approximately one-third of patients (higher in paclitaxel) can expect to have chronic CIPN 6 months or more after the end of chemotherapy.

Generally, the longer the duration of poorly controlled CIPN the more challenging management becomes.

No known preventative treatments for CIPN

Early identification of CIPN, particularly after the first cycle

1.Seretny M, Currie G, Sena E, Ramnarine S, Grant R, MacLeod M, Colvin L and Fallon M. Incidence, prevalence and predictors of chemotherapy-induced peripheral neuropathy: a systematic review and meta-analysis. Pain 2014; 155(12):2461-2470 doi: 10.1016/j.pain.2014.09.020.

Rick Factors

Reported clinical risk factors for CIPN include:

- baseline neuropathy eg diabetes
- a history of alcohol
- decreased creatinine clearance
- specific sensory changes during chemotherapy treatment - including cold allodynia (pain in response to a non-painful cold stimulus)
- cold hyperalgesia (exaggerated pain in response to a painful cold stimulus, such as winter temperatures and very cold water)

Assessment

EORTC CIPN-20 questionnaire which provides more information than the CTAE. In patients with early onset of CIPN and the worrying sign of cold sensitivity, the CIPN 20 will provide a more accurate initial and ongoing assessment of CIPN.

Common complaints

- progressive unpleasant sensations, only sometimes described as pain, particularly in the feet as the day goes on
- burning in the feet especially at night, feet feeling like blocks of ice while not cold to the touch, tingling
- pins and needles
- numbness (unpleasant sensations and pain can occur in numb areas).

The hands have a very similar profile but often less severe than the feet

Occasionally in severe CIPN, the patient will complain of muscle spasm and in very severe cases this can travel high in the legs mimicking both muscle cramp and referred neuropathic pain. Shoes can be difficult to tolerate. Cold weather usually exacerbates CIPN, and warm weather helps.

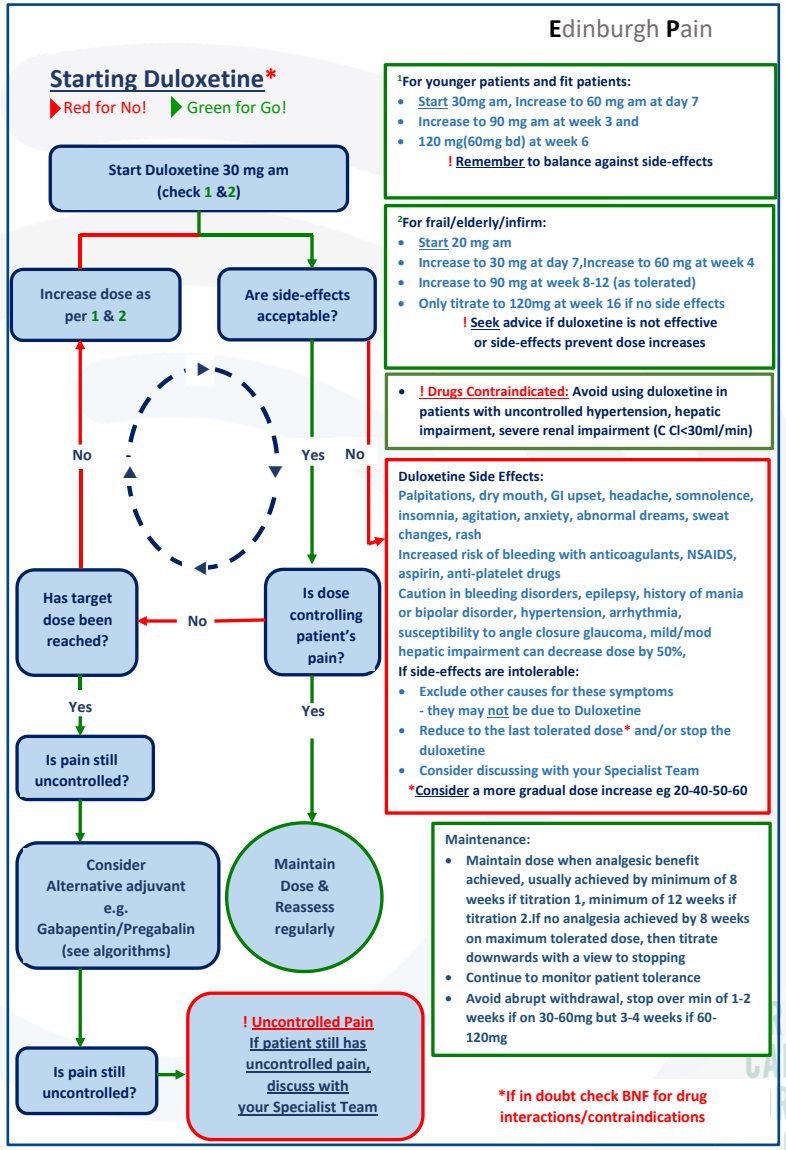
Examination

- Cotton wool ball and cool mediswab

Management

Systematic approach starting with simple non-systemic treatments with no known toxicities and working up to systemic treatments if simpler treatments do not work:

- Physiotherapy
- Peripheral neuropathy socks
- Menthol 5% in aqueous cream
- Topical 5% lidocaine patches
- TENS with conductive gloves and socks
- Duloxetine
- Amitriptyline or imipramine; Pregabalin and Gabapentin
- Capsaicin cream/Capsaicin 8% patch
- Acupuncture



Hidden things to look out for

- Bowel: autonomic neuropathy will often lead to constipation and a general alteration of bowel habit which can be challenging.
- Postural hypotension is another well identified autonomic problem, which can be overlooked, as falls are often put down to motor problems.
- General care with well-fitting comfortable shoes, trying to stay warm in cold temperatures, and being aware that hot and cold water may be sensed abnormally with the risk of scalding.

References

2. Andersen Hammond E, Pitz M, Steinfeld K, Lambert P, Shay B. An Exploratory Randomized Trial of Physical Therapy for the Treatment of Chemotherapy-Induced Peripheral Neuropathy. Neurorehabilitation and Neural Repair. 2020;34(3):235-246. doi:10.1177/1545968319899918
3. Brayall, Patrick SPT; Donlon, Erin SPT; Doyle, Lisa PT, DPT, MS; Leiby, Renee SPT; Violette, Katelyn SPT. Physical Therapy–Based Interventions Improve Balance, Function, Symptoms, and Quality of Life in Patients With Chemotherapy-Induced Peripheral Neuropathy: A Systematic Review. Rehabilitation Oncology 36(3):p 161-166, July 2018. | DOI: 10.1097/01.REO.0000000000000111
4. Niemand, E.A., Cochrane, M.E. & Eksteen, C.A., 2020, 'Physiotherapy management of chemotherapy-induced peripheral neuropathy in Pretoria, South Africa', South African Journal of Physiotherapy 76(1), a1482. https://doi.org/10.4102/sajp.v76i1.1482
5. Tamburin S. et al Rehabilitation, exercise, and related non-pharmacological interventions for chemotherapy-induced peripheral neurotoxicity: Systematic review and evidence-based recommendations Critical Reviews in Oncology/Hematology, Volume 171,2022,103575 https://doi.org/10.1016/j.critrevonc.2021.103575.
6. Fallon M, Storey D, Krishnan A, Weir C, Mitchell R, Fleetwood-Walker S, Scott A, Colvin L. Cancer treatment related neuropathic pain: Proof of Concept Study with menthol, a TRPM8 agonist. Supportive Care in Cancer 2015; 23(9): 2769-2777 doi: 10.1007/s00520-015-2642-8
7. Klinkhamer, Laura; Fallon M. RCT of Menthol in Neuropathic Pain Trial (MINT Trial) to be presented at EAPC, Barcelona 2024.

Post surgery pain

Moderate evidence suggests that almost half of all women undergoing breast cancer surgery develop persistent post-surgical pain, and about one in four develop moderate-to-severe persistent post-surgical pain; the higher prevalence is associated with axillary lymph node dissection.

Prevalence of PPSP after breast cancer surgery is 46%; any location, any severity, captured directly from patients.

Prevalence of patient reported pain at any location reduces to 27% when restricted to moderate or greater severity.

Higher prevalence of persistent pain is associated with axillary lymph node dissection (ALND), likely because of sacrifice of the intercostal brachial nerve.

Both prevalence and severity of persistent pain seem to remain stable for over 2 years of available follow up data, suggesting that once PPSP develops, it may be unlikely to improve.

1. Wang et al. Prevalence and intensity of persistent post-surgical pain following breast cancer surgery: a systematic review and meta-analysis of observational studies. British Journal of Anaesthesia, 125 (3): 346e357 (2020) doi: 10.1016/j.bja.2020.04.088.

It is associated with:

- reduced quality of life
- increased risk of unemployment
- and greater healthcare costs.

Preliminary evidence suggests that education, exercise therapy, psychological or behavioural interventions, and paravertebral blocks in addition to general anaesthesia or ketamine infusion perioperatively may reduce the rate of persistent pain after breast cancer surgery.

Types

There are several types/combinations of post breast surgery pain and all more common with severing of intercostal brachial nerve. Otherwise the type of surgery seems less important:

1. Post mastectomy pain
2. Pain related to breast conserving surgery
3. Axillary pain
4. Lymphoedema exacerbating surgical pain
5. Tethering of scar due to a combination of factors

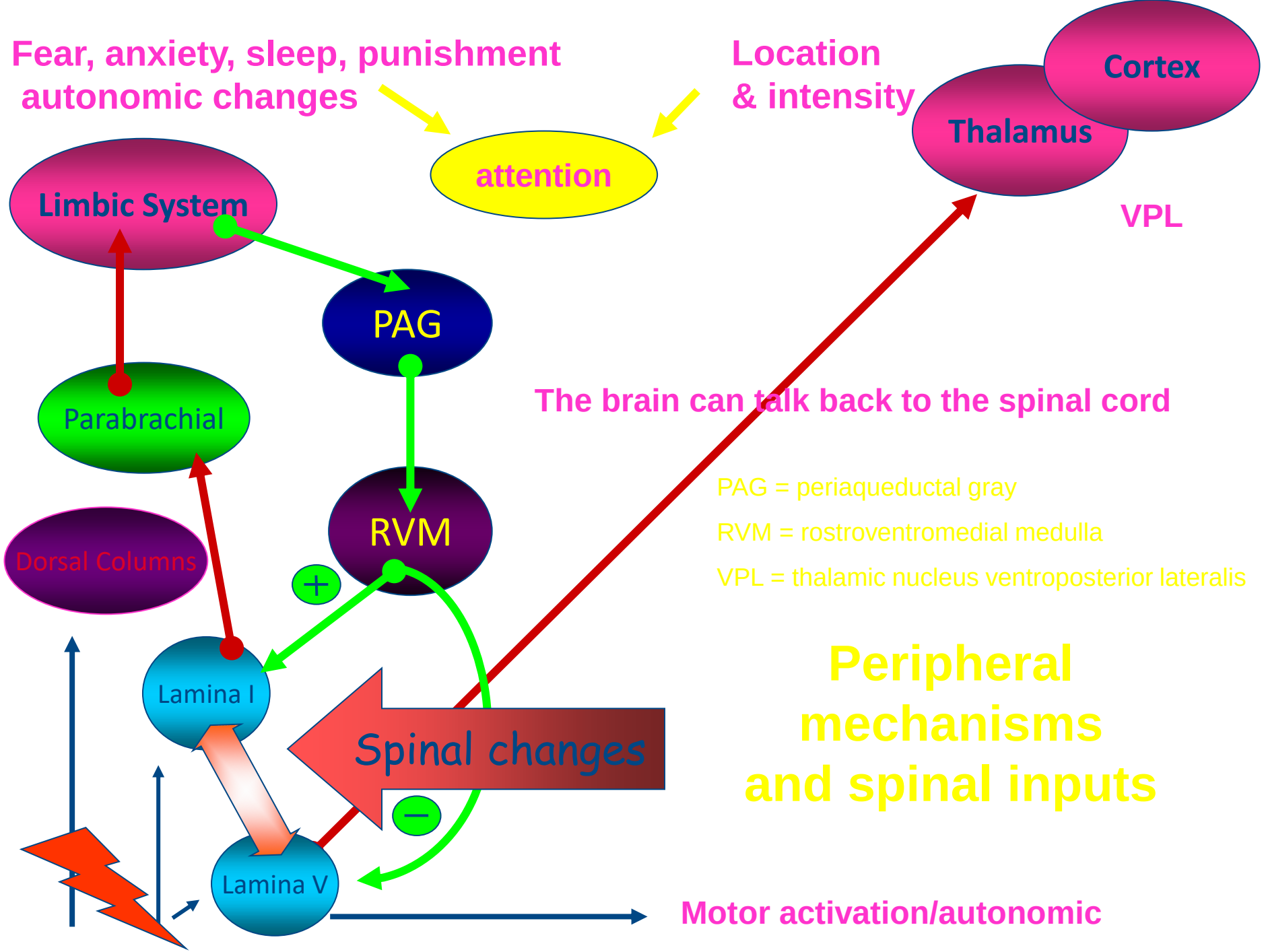
Types

In addition to axillary dissection, other potential risk factors are:

1. Radiotherapy and neurotoxic chemotherapy

2. Mood impacting factors such as altered body image.

Important to note that nerve pain/neuropathic pain anywhere in the body is associated with recruitment of the mood pathway in the brain which will both lower mood and increase pain pathway activity


Fear, anxiety, sleep, punishment
autonomic changes
Location
& intensity
attention
Cortex
Thalamus
VPL
Limbic System
PAG
Parabrachial
The brain can talk back to the spinal cord
Dorsal Columns
RVM
+
PAG = periaqueductal gray
RVM = rostroventromedial medulla
VPL = thalamic nucleus ventroposterior lateralis
Lamina I
Spinal changes
Peripheral
mechanisms
and spinal inputs
–
Lamina V
Motor activation/autonomic

Assessment

Usually constant pain with exacerbations on light touch and/or movement.

Pins and needles, shooting pain, burning and other unpleasant sensations in an area which may or may not be numb.

Wearing a bra can exacerbate the pain. Physical contact with a partner is usually severely limited.

Mapping out of the area affected is useful, especially as an initial response to medical management is demonstrated by a shrinkage of the painful area.

Examination using a cotton wool ball will often show acute sensitivity to light touch and touching with a mediswab will sometimes demonstrate an exaggerated cool response

Areas of numbness can vary and may be painful.

Management

1. Simple analgesia such as paracetamol , NSAIDs if no contraindications - opioids best avoided
2. Dexamethasone 2 mg per day during radiotherapy may be sufficient
3. Manage all concomitant problems simultaneously such as lymphoedema techniques, CIPN other pains.
4. Lidocaine 5% patches Maximum of 3 patches can be used at the one time.
5. 5% Menthol in aqueous cream (Dermacool) applied to painful areas and lower cervical/upper thoracic spine bd
6. Trial of a TENS machine, but not recommended if sensitivity to light touch.
7. Neuropathic agents. Duloxetine at a starting dose of 30 mg am would be the neuropathic agent of choice. Pregabalin and Gabapentin
8. Topical capsaicin 8% patch
9. Acupuncture for scar pain

Painful neuroma

- Peripheral nerve injury: aberrant growth and painful neuroma formation
- Nerves at high risk of traction and/or laceration injury at the time of mastectomy are the intercostal brachial cutaneous nerve (ICBN), long thoracic, thoracodorsal, lateral branches of the intercostals, lateral, and medial pectoral nerves
- The results from reviews indicate that the surgical technique of neuroma excision and implantation can provide long-term relief from chronic neuropathic pain, however a clear diagnosis and appropriate skill are required.

Scar management

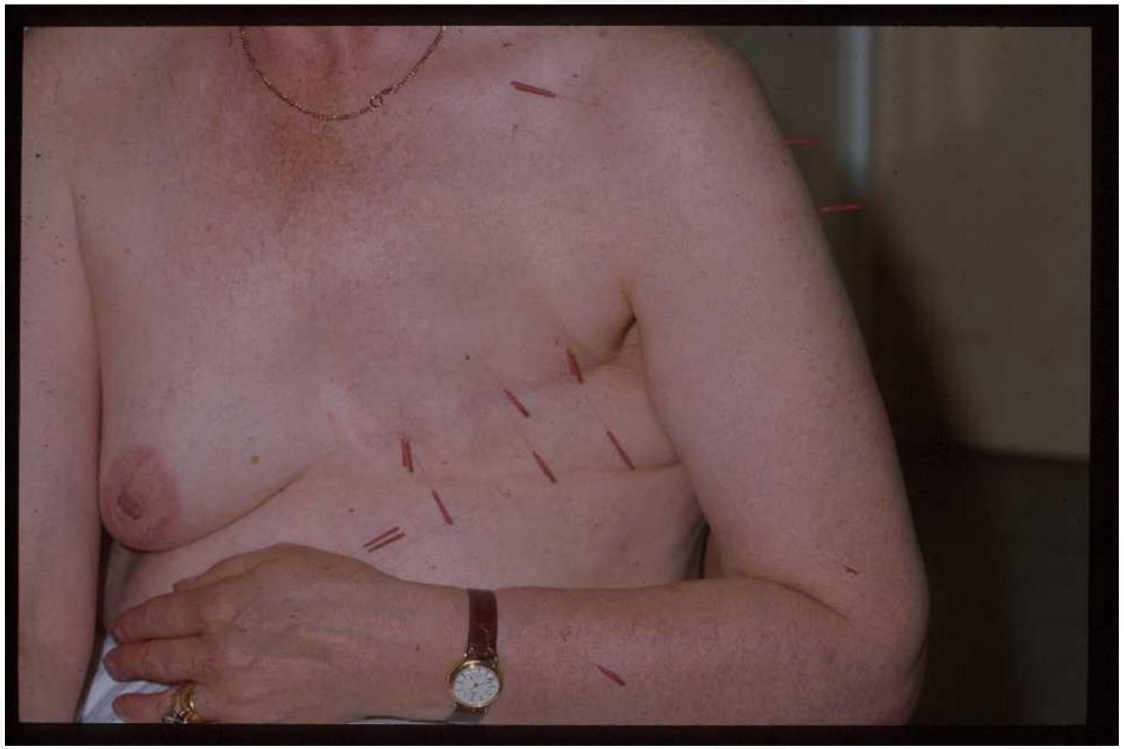
- Scar Management (fat transfer, laser, lymphatic surgery) abnormal scarring, such as scar contracture and subcutaneous fibrous adhesions- recognized as adverse outcomes and may be treated. This phenomenon can be exacerbated by axillary node dissection and adjuvant radiation. Not only does contracture lead to stiffness and decreased mobility, but also may compress local peripheral nerves. The promising results from Level I/II fat grafting studies support its use for neuropathic pain relief in breast cancer patients at high risk for scar contracture.

- The successful pain relief outcomes from one laser study can be regarded similarly to the results from fat grafting. Treating the skin with a non-ablative laser may release scar contractures through stimulation of the local inflammatory response which increases blood flow, vascular permeability and cell metabolism. Laser therapy may also directly affect local peripheral nerves through a laser induced neural block that causes change in nociception.

PMPS

- While PMPS is widely regarded to be a neuropathic disorder, it has been suggested that the musculoskeletal system and myofascial pain may contribute to chronic post-operative pain syndromes.

- Muscle fibrosis and increased motor nerve excitability, secondary to inflammation, can create myofascial trigger points (TrPs).



Physiotherapy programs utilizing strengthening exercises and massage are effective for improving shoulder pain by reducing presence of TrPs.

Reviews support the physiotherapy in treating PMPS patients experiencing neck and shoulder/axillary pain and highlight the benefits of water exercises.

Managing concomitant problems and attenuating impact of radiotherapy is important:

- Management of CIPN is important as CIPN will exacerbate all other pains
- Consideration of a small dose of oral steroids during adjuvant breast radiotherapy to reduce peripheral neuro-inflammation which will exacerbate PPSP.

Like all pains, optimum success comes with early identification, acknowledgement and explanation to the patient, and a clear management plan which draws on the simplest approaches first.

Questions

Scan or click the QR code to ask a question:

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