Guided/Graded Motor Imagery for Cancer Pain: Exploring the Mind-Brain Inter-relationship

Sir,

I read with interest articles published in Indian Journal of Palliative Care (IJPC) for their overall simplicity, scientific novelty, practical applicability, and interdisciplinary nature. Recently, I came across published literature on pain in people with cancer and I was interested in understanding the role of brain in pain, its perception, and its experience which influence its reporting and behavior.

Mechanism-based classification of cancer pain included two distinct mechanisms; cognitive-affective (CA) and central sensitization (CS), both of which operate through the networks and pathways in the brain although the former being non-organic/functional and latter being organic/structural. The CA mechanism depends predominantly upon the role of mind in pain whereas CS mechanism depends predominantly upon the role of brain in pain.[1]

While mind was perceived to be an 'abstract' body, brain was understood to be a 'rational' body; both of which receive, perceive, process and project action-reaction phenomena. The inseparable inter-relationship between mind and brain grew from a foundational knowledge of individual roles either played on pain along a biopsychosocial pain model.[2]

Mind and Brain are supposed to represent functionalities of dominance in right and left cerebral hemispheres respectively. Dominance in right hemisphere is manifested by advanced skills in creativity and instinctive behavior whereas left hemispheric dominance is manifested by advancement of skills related to problem-solving and scientific processing.[3]

Gender and handedness influence such dominance, for example: Men tend to be left-hemisphere dominant and women tend to be right-hemisphere dominant; a right-handed person has a left cerebral dominance and vice versa; and, women tend to be right cerebral dominant. This is physiologically denoted as laterality perception (LP).[4]

LP works on the principle of neuroplasticity where recent studies explored right-left perceptual abnormalities not only in stroke,[5] but also in patients with chronic pain. One technique of training LP is mirror therapy. The subject is instructed to look into the reflected image of the normal hand/leg on a mirror while the affected hand/leg is hidden behind the mirror during performance of movements and tasks. Mirror therapy was initially used for phantom limb pain.[6]

Mirror therapy is a comprehensive component of Graded motor imagery (GMI) which is also termed as Guided imagery, Motor imagery, and Mental practice. GMI was shown to be beneficial in people with stroke and/or chronic pain for relieving symptoms and improving functional recovery.[7,8]

As an inherent part of the illness and its experience, cancer pain disrupts the connectivity between mind and brain, which essentiates use of GMI to re-establish the inter-relationship. Breast cancer survivors reportedly used guided imagery as a vehicle for reconnecting to the self, to make sense of their experiences with breast cancer, and as a tool for managing cancer pain.[9]

Predictors of successful outcomes of GMI include but not limited to previous history with imagery use and imaging ability irrespective of perceived outcome expectancy.[10] Few studies highlighted the therapeutic use of guided imagery in people with cancer pain that compared GMI with progressive muscle relaxation[11] and music therapy[12] but found only conflicting evidence for its efficacy.

The mechanisms of imagery and mirror therapy involve cortical re-organization and neuronal plasticity.[13] This warrants the need for future high-quality, population-based, pragmatic clinical trials on GMI in cancer pain population if we aim at restoring the normal mind-brain inter-relationship in cancer pain.

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