

Role of drug infused Kinetic tapes in Lymphoedema management

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The human lymphatic system comprises lymphatic vessels and lymph nodes running parallel to the circulatory system. Lymphoedema occurs when there is an imbalance due to reduced lymph transport capacity leading to accumulation of interstitial fluid and protein. This failure of lymphatic system to adequately transport excess water, proteins and waste products away from the affected area results in a chronic inflammatory response manifesting as swelling, and lead to skin and tissue changes. Secondary proliferation of neutrophils, macrophages and fibroblasts along with accumulation of collagen leads to chronic inflammation and fibrosis. This abnormal accumulation of protein rich interstitial fluid resulting from insufficient lymphatic drainage has serious multiple, disabling and chronic sequelae too. Apart from reported deleterious effects on patients physical and psychological well being, it has been widely documented that lymphoedema affects body image, reduces self esteem, causes pain, discomfort, functional impairments, depression, anxiety and problems with sexual, familial and social relationships. Lymphoedema increases the risk of cellulitis and frequency of hospitalization.

Cancer related lymphoedema commonly occurs after treatment of breast cancer, with a prevalence of 6-54%. Upper limb lymphoedema occurs in 24 – 49 % of cases with total mastectomy and in 2 -49 % of cases with axillary lymph node dissection. Cancer related damage to the lymphatic system occurs as a result of surgery, radiotherapy or progression of the neoplastic disease.

It is important to have safe, effective and evidence based treatment options. A program combining skin care, manual lymphatic drainage, exercises and compression therapy is recognized as the best practice in lymphoedema management. Physical therapy, accepted as a gold standard therapy, in various duration, frequency and settings has been shown to have a positive effect on the management and maintenance phase of lymphoedema. With standard care and management having significant economic consequences, bandage changes and expensive compression hosiery drain the available resources. Patients do not adhere to treatment with Multilayer compression Bandages, as its use makes them feel like prisoner to the disease and brings back the negative memories of cancer and its treatment. Treating cancer related lymphoedema also must take into consideration the climatic considerations of a country, with majority of patients disliking the treatment due to hot and humid conditions. Well documented, promising and inexpensive methods from alternative medicine are still needed.

Kinetic tapes can be recommended in hot and humid conditions where bandages may be uncomfortable. Taping is also extremely useful on body parts where garment fitting is problematic. Kinetic taping has also been recommended in advanced cancer related lymphoedema when bandaging may not be tolerated, or is contraindicated due to pain or because it further reduces the patients quality of life. Taping can be used in addition to compression bandaging to cross watersheds. KT causes significantly less discomfort, difficulty and inconvenience than bandaging. Wound protection is a major problem with kinetic taping. Because of the adhesive characteristics of the kinetic tape, putting on and removing the tape in lymphoedema therapy requires particular attention. There is a higher possibility of allergic reaction to tape and skin inflammation in area of kinetic tape application.

Kinetic tapes have been suggested as a promising treatment option for acute sport injuries, musculoskeletal disorders and also edema. One of the physiological effects of the tape is decongestion of lymphatic fluid accumulated under the skin. Kinetic tapes can provide directional pull that guides the lymph fluid in the desired direction of drainage. This is important in routing and rerouting the lymphatic fluid in the lymphatic vessels, and thus reducing swelling and edema. After applying the kinetic tape, the taped area will form convolutions to increase the space between the skin and muscle. Once the skin is lifted, the flow of blood and lymphatic fluid is promoted. Other advantages are that a patient can take a shower without taking the tape off. Patients can wear it from 1 – 4 days and even longer. Application of kinetic tapes increases the pressure difference within lymph vessels, increases the flexibility of underlying connective tissue, and also induces a micromassaging effect.

A modification to the conventional taping, drug infused tapes, the Move Kinetic Tapes (MKT) have additional adjunct beneficial effect over the mechanical and sensori motor effects. The addition of menthol, with its cooling and analgesic properties, functions as a counter – irritant. Borneol, a simple pharmaceutical composition with significant therapeutic effects and non toxic reactions has a remarkable antihyperalgesic effect on neuropathic and inflammatory pain. Findings also suggesting that borneol may ameliorate mechanical hyperalgesia by enhancing GABA_A receptors mediated effects. Borneol as a penetration enhancer may also facilitate guiding other components through the biological barrier into targeted organs and tissues. Synthetic borneol has been indicated to increase uptake of lymph nodes.