Introduction
Musculoskeletal pain may be associated with a wide range of disorders such as ankle sprains, osteoarthritis, muscle pain syndromes and various spine-related neck and low back conditions. This article will be focusing briefly on the musculoskeletal system and the use of topical treatments for musculoskeletal pain.

The musculoskeletal system
The musculoskeletal system consists of the body’s bones, muscles, tendons, ligaments, joints, cartilages and other connective tissues. It allows for movement and provides form and stability to the human body. A number of diseases as well as trauma can cause injury to any of the components in the musculoskeletal system. For most musculoskeletal disorders, the primary symptom is pain with injuries being the most common cause of pain.

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Musculoskeletal pain may vary in intensity from mild to severe; it may be local or it may affect more than one area (diffuse). With most injuries, the pain is short-lived or acute. However, the pain may also be ongoing as seen in chronic conditions such as arthritis.

Examples include:
- Muscle pain (myalgia) which can cause discomfort i.e. a muscle cramp or spasm.
- Ligament or tendon pain is often described as a “sharp” pain which is usually relieved by rest and is worse when the affected tendon or ligament is moved or stretched. Injury (i.e. a sprain) is the most common cause of ligament pain.
- Arthralgia is the medical term for joint pain and it may or may not be related to joint inflammation (commonly known as arthritis). In addition to pain, arthritis may also cause swelling. The pain is generally present even if the joint is not moved and it usually worsens when the joint is moved.
- Sometimes more than one musculoskeletal component may be affected i.e. fibromyalgia may cause pain in the ligaments, tendons or muscles.

Topical treatments
Topical analgesics deliver medication at the site of injury/pain. There are different products available and depending on the ingredients included; they can relieve local pain through several different modes of action. The medium in which the active ingredient is formulated may also affect the skin penetration depth and absorption rate of topical treatments. In addition; the rubbing or massaging of the affected area during application of the topical treatment may also produce a sensation of pressure and warmth.

When compared with the potential for side effects, liniments, rubs, ointments, aerosols and other topical formulations for pain are usually less harmful compared to treatments taken orally. However, systemic side effects are possible. Topical nonsteroidal anti-inflammatories (NSAIDs) may be absorbed through the skin into the body. Therefore, it is important to be aware of side effects and precautions before recommending products containing NSAIDs.
Topical nonsteroidal anti-inflammatory drugs

Nonsteroidal anti-inflammatory drugs have analgesic, anti-inflammatory and antipyretic properties.

Several NSAIDs are available for topical use i.e. indomethacin, ketoprofen, piroxicam, flurbiprofen and diclofenac. They are used to reduce inflammation and to relieve pain. Some topical NSAIDs have been used in the treatment of inflammatory musculoskeletal conditions and soft-tissue injuries and when compared to placebo there is evidence to suggest that topical NSAIDs are more effective. It has been shown that some topical preparations containing NSAIDs have similar benefits to oral NSAIDs in the treatment of osteoarthritis and low back pain.

Topical NSAIDs may be considered as an alternative treatment in patients with osteoarthritis who cannot tolerate or have contraindications to oral treatments, or who may be at increased risk of side effects with the use of oral NSAIDs, such as older adults (e.g. patients 75 and older). Topical NSAIDs may also provide modest relief for acute muscular or rheumatic pain. A trial treatment using topical NSAIDs may also be considered for patients with localised pain in specific joints.

Topical counter-irritants and rubefacients

An array of counter-irritant agents are available as solutions, liniments, gels, lotions, ointments, creams and patches with many products containing more than one active ingredient. Common active ingredients included in rubefacient products are salicylate compounds, essential oils, turpentine oil, camphor, menthol, nicotinate, capsicum, capsaicin and capsicum oleoresin.

The word rubefacient refers to the warming and reddening of the skin. The hypothesis behind the use of counter-irritants and rubefacients is to distract attention from pain by bombarding the nervous system with sensations other than pain (i.e. irritation, warmth). The paradoxical pain relieving effect of topical counter-irritants is achieved by producing a less severe pain to counter a more intense pain and is known as counter-irritation. These products are used alone or in addition to massage in the treatment of a range of painful musculoskeletal conditions.

It is thought that menthol and camphor act on heat-and cold-sensitive receptors. When applied topically, menthol triggers a sensation of cold that is followed by a sensation of warmth.

Capsaicin (one of the active ingredients in capsicum) is derived from chilli peppers. When applied, capsaicin causes a temporary feeling of warmth. It is not considered a traditional counter-irritant since it does not rely on vasodilation (widening of the blood vessels) in the skin and it does not cause reddening of the skin. The effect of capsaicin is due to an excitation of nerve ending in the skin. As a result, the transmission of the pain signal is reduced in the area of application.

Capsaicin has been used alone as a topical analgesic in a range of painful conditions including rheumatic disorders. Although its benefits are modest, it may be worthwhile trying it in some patients i.e. patients who are allergic to topical NSAIDs, those who did not respond to other treatments or as an adjunctive therapy for the relief of chronic musculoskeletal pain.

Advice for patients

Besides using medical treatment, musculoskeletal injuries should be treated with RICE (rest, ice, compression and elevation). RICE should be initiated as soon as possible after an acute injury.

Table I contains a few points of advice for patients that may assist in giving guidance on how to use topical treatments safely.

Summary

For some patients, topical treatment may be their choice of treatment for musculoskeletal pain. Topical treatments deliver medication directly to the site of pain and may be used alone or together with other treatments. The use of topical products for the management of pain have several potential advantages over oral medications, such as lower rates of absorption by the body and fewer side effects. However, side effects may still occur and this should always be taken into consideration before recommending a product.

Bibliography (available on request)