Non-Medicinal Management of Pain

No discussion of acute and chronic pain management is complete without strongly advocating the use of tools and techniques known to enhance comfort and recovery, outside the western-oriented construct of drugs and medications.

Cryotherapy:

Application of ice slows down of the nerve conduction of small caliber myelinated fibers (Aä and C). Also it causes peripheral vasoconstriction (and subsequent reduced blood flow) and slows down of local inflammation. Application of cryotherapy is indicated for acute attacks of arthritis or to relieve pain and prevent inflammation. The simplest way to apply cryotherapy is to massage with ice (5 to 10 minutes) for 3 to 6 times a day (Sawaya, 2007).

Thermotherapy:

Heat causes peripheral vasodilatation and stimulates numerous thermosensitive receptors that increase gate-control mechanisms causing local analgesia. Hot water bottles or hot-packs are simple methods for applying superficial heat. Tissue can be heated up to approximately 1 cm in depth and they are recommended particularly for distal joints. Superficial heat should be applied for 15 to 20 minutes, one to three times a day (Sawaya, 2007).

Actinotherapy:

Actinotherapy involves treatment of disease using infrared light. Infrared rays can heat up deep-seated tissues producing warmth and analgesia. It is mainly applied in joints affected with arthritis. The duration of exposure should be 15 minutes to one hour (Venugopalan, 2005).

Ultrasound Therapy:

Ultrasound waves can penetrate biological tissue up to 5 cm in depth. During application the temperature rise varies depending on the treated site by +1°C to +4°C (Draper *et al.*, 1995). High-frequency ultrasound is characterized by low-depth penetration (0.5-1 cm) but a powerful calorific effect which can be used only on distal joints of limbs. Low-frequency ultrasound (0.8-1 MHz) penetrates tissue more deeply (0.5-5 cm) which can be used to treat hip and shoulder joints and to reduce muscular spasm. In general, it should be applied for 5 to 10 minutes for two to three times a week (Sawaya, 2007).

Transcutaneous Electrical Neuro-Stimulation (TENS):

Two modalities of TENS currents are used on arthritic animals namely gate-control TENS and endorphinic TENS. Gate-control TENS works by causing peripheral hyperstimulation of large caliber sensitive fibers (Aâ) at high-frequency (80 or 100 Hz) thus inhibiting the transmission of nociceptive influxes conveyed by small-caliber fibers (Aä and C) in the dorsal horn of the spinal cord. This type of current generates rapid but short analgesia and is indicated mainly for acute pain. The endorphinic TENS works by causing stimulation of small-caliber fibers (Aä and C) at very low frequency (2 to 8 Hz) which favours the release of endorphins. Endorphinic TENS is indicated for subacute and chronic pain. To be effective, a TENS current should be applied for a minimum of 20 to 30 minutes. (Sawaya, 2007).

Extra-corporeal shock wave therapy (ESWT):

Based on lithotripsy techniques, ESWT has been used effectively since the 1990's to treat diverse rheumato-orthopaedic disorders in man (epicondylitis) and horses (desmitis of the suspensor ligament of the fetlock). It was observed that ESWT is effective in reducing pain rapidly and sustainably (pain relieved for several weeks or months) and in improving mobility and quality of life of arthritic dogs (Sawaya, 2007).

Acupuncture:

The analgesic action of acupuncture results from gate-control mechanisms when focal acupoints are treated and from stimulating the release of endogenous opioids when distal spots are treated to procure long term analgesia. Acupuncture can be used to treat acute as well as subacute and chronic attacks of arthritis. In the event of acute inflammatory attack, one session every two to three days is necessary until clinical signs resolve whereas for chronic pain, several sessions are required (Altman, 1998).

Low Level Laser Therapy (LLLT):

The localized and systemic increase in â-endorphins after LLLT irradiation has been clinically reported in multiple studies with subsequent pain reductions. Laser irradiation suppresses the excitation of these fibers in the afferent sensory pathway (Ohno, 1997). LLLT restores nerve cell action potential back to its normal value. It also helps to reduce levels of bradykinin which elicit pain by stimulating nociceptive afferents in the skin and viscera.