



Ivet B. KOLEVA

Medical University of Sofia, Bulgaria

Physical analgesia – state-of-the-art (Contemporary Rehabilitation methods for Pain relief)

Pain management is an important part of rehabilitation algorithms in clinical practice. **Pain** is one of the most frequent sensations, formed in the nervous system. By definition, pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. The Declaration of Montreal of the International Pain Summit of the International Association for the Study of Pain (IASP) identifies that chronic pain is a serious chronic health problem and access to pain management is considered as a fundamental human right. We proposed the notion **physical analgesia** for the application of physical factors for pain management. By our opinion the anti-pain effect of physical modalities is very important, with a high level of efficacy. Physical analgesia has not side consequences and may be applied in combination with other therapeutic factors.

In physical analgesia a lot of **physical modalities** are applied:

- **Preformed modalities:** Low frequency currents and low frequency modulated middle frequency currents (sinusoidal-modulated, interferential, Kots currents); Transcutaneous electroneurostimulation (TENS); High frequency currents (*diathermy, ultra-*

high frequency currents, decimeter and centimeter waves); Ultra-sound and phonophoresis with NSAIDs; Low frequency magnetic field; Deep Oscillation;

- **Natural modalities:** Kryo-factors (*ice, cold packs, cold compresses*); Thermo-agents (*hot packs, hot compresses*), Hydro- and balneo-techniques (*douches, baths, piscine*); hydro and balneo-physiotherapy techniques (*underwater massage, under water exercises, etc.*); Peloidotherapy (*fango therapy, thermal mud, sea lye compresses*); Physiotherapy techniques - stretching, post-isometric relaxation, manual therapy (traction, mobilization, manipulation); massages (manual and with devices; peristal, connective tissue massage, etc.);
- **Reflectory methods:** electrotherapy, thermotherapy and physiotherapy in reflectory points and zones; acupuncture, laserpuncture, acupressure, etc

We propose our own theory for explanation of **pathogenetic mechanisms** of action of physical modalities on the nociceptive and neuropathic pain: *By influence on the cause for irritation of pain receptors* - consequence of stimulation of circulation, metabolism and trophy of tissues (by low and medium frequency electric currents, magnetic field, ultrasound, He-Ne laser; massages; manual techniques); *By blocking of*

nociception (low frequency currents, including transcutaneous electrical nerve stimulation or TENS; lasertherapy); By inhibition of peripheral sensitization (low and middle frequency currents, TENS; magnetic field; lasertherapy); *By peripheral sympaticolysis* (low frequency currents like dyadinamic currents, peloids); *By stopping the neural transmission (by C and Aδ delta - fibers) to the body of the first neuron of the general sensibility* (iontophoresis with Novocain in the receptive zone – the region of neuro-terminals); *By input of the gate-control mechanism* (TENS with frequency 90-130 Hz and interferential currents with high resulting frequency - 90-150 Hz); *By activation of the reflectory connections: cutaneous – visceral, subcutaneous-connective tissue-visceral, proprio-visceral, periostal-visceral and motor-visceral* (classic manual, connective tissue and periostal massage, post-isometric relaxation and stretching-techniques); *By influence on the pain-translation in the level of posterior horn of the spinal medulla – using the root of activation of encephalic blocking system in the central nervous system* (increasing the peripheral afferentation) *and influence on the descending systems for pain – control* (TENS with frequency 2-5 Hz and interferential currents with low resulting frequency 1-5 Hz, acupuncture and laserpuncture; reflectory and periostal massage, zonothrapy, acupressure, su-dgok massage;

preformed factors in reflectory zones /palms of hands, plants of feet, paravertebral points; zones of Head, of Mackenzie, of Leube-Dicke, of Vogler-Krauss/); *By inhibition of central sensitization* (lasertherapy; peloidotherapy; physiotherapy); *By influence on the psychic state of the patient – the drug «doctor» and the drug «procedure».*

The influence of physical modalities on the interstitium ('milieu interieur' of Claude Bernard) is the theoretical base for a combined pain management programme.

We present our own **experience and results** in patients with conditions of the nervous and motor systems

Keywords: pain, physical analgesia, rehabilitation methods

Biography

Philosophy Doctor - scientific specialty "Physical Therapy and Rehabilitation"; thesis (2004): 'Investigation of capacities of some physical modalities in the prevention, therapy and rehabilitation of diabetic polyneuropathy patients'. Doctor of Medical Sciences - scientific specialty "Physical Therapy and Rehabilitation"; thesis (2009): 'Complex neurorehabilitation algorithms for functional recovery and amelioration of independence in activities of daily living in socially significant invalidating neurological diseases'. Philosophy Doctor - scientific specialty "Pedagogics"; thesis (2013, Sofia University): 'Innovations in the Education in the field of Rehabilitation'. SCIENTIFIC POSITIONS: Associated Professor (2006); Professor (2010); scientific specialty "Physical Therapy and Rehabilitation". High Attestation Commission at the Council of Ministers, Bg. She knows French, Spanish, English, Russian language.

yvette@cc.bas.bg