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Non-Pharmacological Treatment of Pain in Dental Medicine

Elizabeta Popova Ramova

Faculty of dental medicine, MIT University Skopje, Republic of North Macedonia.
Assoc.prof.d-r Elizabeta Popova Ramova,
Specialist of Physical medicine and rehabilitation, and PhD of it,
Dean of Faculty of dental medicine, MIT University Skopje.

***Corresponding author**

Elizabeta Popova Ramova,
Faculty of dental medicine, MIT University Skopje, Republic of North Macedonia.
Assoc.prof.d-r Elizabeta Popova Ramova,
Specialist of Physical medicine and rehabilitation, and PhD of it,
Dean of Faculty of dental medicine, MIT University Skopje.

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Abstract

Pain in dentistry is a significant symptom, which is often one of the strongest symptoms. It can occur for several reasons such as neuralgia, inflammation, swelling or postoperatively, as well as in temporomandibular dysfunction. The aim of our presentation is to present non-pharmacological treatments of pain in dentistry in postoperative conditions.

Material and Method: *The physical procedures that are available to us in the postoperative period should be chosen carefully because of their indications and contraindications for application. Cold, light therapy, TENS, and electroacupuncture, as well as Magnetotherapy and functional typing are options.*

Results: *In the acute state of pain, cold applied as cryomassage and cryowraps is the method of choice. In the subacute stage, swelling can be eliminated with manual lymphatic drainage, cold application and TENS electrogymnastics. In the chronic stage 7 days after the intervention, the application of light therapy in the form of an LED mask, TENS, electroacupuncture and magnetotherapy are options of choice.*

Discussion: *In the acute state of the surgical intervention, anaesthesia with local anaesthetic application is inevitable. In the postoperative course, many of the analgesics can interact with other medications that the patient is taking and prolong the bleeding period. In such conditions, the choice of non-pharmacological interventions is justified individually according to the general condition of the patient. Conclusion: Cold applications for toothache have always been the method of choice. But modern applications have a more practical application. Light therapy and TENS can be the method of choice due to the easy and practical application of 30 minutes a day and can be applied by the dental nurse.*

Keywords: Non-Pharmacological Treatment of Pain, Dentistry.

Introduction

Pain is a symptom in medical science, but it is also an unwanted physical and spiritual experience of every person. Knowledge about the pathophysiology of the pain experience is growing. It is important that undergraduate medical students, postgraduate doctors and other health care professionals can easily access this new information, so that can better understand, assess and manage pain (Hughes, 2008; Ramova & Poposka, 2008; Ramova, 2004).

Communication with patients with pain is vital, but can be difficult, in some conditions and age of them.

Our characteristic model of treatment of pain with nonpharmacological interventions, is specific in Physical medicine and rehabilitations. Some time it can be only one choice of treatment and in another adjuvant therapy to primary treatment (Hylands-White et al., 2017; Rampazo & Liebano, 2022; Neira et al., 2024; Zhou et al., 2024).

From our longtime experience in treatment of pain in Physical medicine and rehabilitation, we have one general model by condition of disease and pain, showing in table 1, 2 and 3.

Table 1: Treatment of pain in acute stage of disease

Disease	Medication	Non-Pharmacological intervention
Osteoarthritis (Carrasco-Labra et al., 2023; Garstka et al., 2023)	• Anti-inflamatory drugs (NAR, Peros, infusion, local gel) Ketoprofen, Diklofenak (mi. iv, peros) • Local analgesic infiltration (Lidocain2%)1x10 days, • Local triamcinolone 40mg (depo corticoid) 1x10 days	• Imobilisation-orthoses, • Ice, cold application, (Banaszak et al., 2024; Lata et al., 2022) • Rest, and isometric exercises, • Tayping
Soft tissue trauma, Post surgical condition	• Anti-inflamatory drugs (NAR, Peros, infusion, local gel) Ketoprofen, Diclofenac (im.iv,peros), • Serrapeptase (enzyme)	• Imobilisation-orthoses, • Ice, cold application, • Rest, and isometric exercises, • Tayping
Radicular pain Neurological pain Muscles pain	• Anti-inflamatory drugs (NAR, per os, infusion, local gel) Ketoprofen, Diklofenak (im.iv,peros), with B-complex vitamins, • Central analgesic (Paracetamol 500mg, 2x1), Caps. Tramadol a 50mg, 2x1, 10 days. • Local analgesic infiltration (Lidocaine 2%) 1x10 days, • Local triamcinolone 40mg (depo corticoid) 1x10 days	• Imobilisation-orthoses, • Ice, cold application. (Banaszak et al., 2024; Lata et al., 2022) • Rest, and isometric exercises, • Tayping

Table 2: Treatment of pain in subacute stage of disease

Disease	Medication	Non-Pharmacological intervention
Osteoarthritis	• Anti-inflamatory drugs (NAR, per os, infusion, local gel) Ketoprofen, Diclofenac (im.iv, peros) • Chonfroprotectors, • Caps.Curcumin 500 mg.1x1	• Imobilisation-orthoses, • Ice, cold application, • Rest, and isometric exercises, • Tayping • Electrotherapy (interferent current Diadinamic current, Iontophoresis with NASR, (Ragit et al., 2022; Roustit et al., 2014; Verma et al., 2023; Cebalo et al., 2021; Walsh et al., 2009) • Polaryzed light (Das et al., 2023) • LLLT (Huang et al., 2024; Glass, 2021) • Sonophoresis (DE Oliveira et al., 2022)
Soft tissue trauma, Post surgical condition	• Anti-inflamatory drugs (NAR, per os, infusion, local gel) Ketoprofen, Diclofenac (im.iv, peros), • Serrapeptase (enzyme)	• Imobilisation-orthoses, • Ice, cold application, • isometric exercises, Exercises with out of weight • Tayping (Marathe et al., 2024) • Electrotherapy (interferent current Diadinamic current, Iontophoresis with NASR, • Polaryzed light, • LLLT, • Sonophoresis

Radicular pain Neurological pain Muscles pain	• Anti-inflamatory drugs (NAR, per os, infusion, local gel) Ketoprofen, Diklofenak (im.iv, peros), with B-complex vitamins, • Central analgesic (Paracetamol 500mg, 2x1), Caps. Tramadol a 50mg, 2x1, 10 days. • Local analgesic infiltration (Lidocaine 2%) 1x10 days, • Local triamcinolone 40mg (depo corticoid) 1x10 days,	• Imobilisation-orthoses, • Ice, cold application, • Rest, and isometric exercises, • Electrotherapy (interferent current Diadinamic current, Iontophoresis with NASR, • Light therapy • Sonophoresis • Aromatherapy (Mistry et al., 2023; Samani et al., 2024) • Acupuncture (Cai et al., 2021; Guney-Deniz et al., 2023)

Table 3: Treatment of pain in chronic stage of disease

Disease	Medication	Non-Pharmacological intervention
Osteoarthritis	• Chonfroprotectors, • Caps.Curcumin 500 mg.1x1, • NARS sometime	• Mobilisation, active exercises with weight • Warm applications, • Electrotherapy (interferent current Diadinamic current, Iontophoresis with NASR, • Sonophoresis • Hydrogymnastic • Acupunsture • Aromamassage
Soft tissue trauma	Local application of fibrinolytic crease, to increase elasticity	Same like by osteoarthritis
Radicular pain Neurological pain Muscles pain	• Central analgesic -Tab. Paracetamol 500 mg if it is need. • Tab.B-complex	Same like by osteoarthritis

Pain management in postgraduate medical studies is part of many speciality for treatment of it by medicaments, drugs, and surgical treatment. The protocol for treatment is consisting of: anamnesis, clinical examination, diagnostic procedures, Diagnosis and treatment. Only Physical medicine and rehabilitation with some alternative medicine methods and nutrition can treated it nonpharmacological (Zhang et al., 2023). The physical therapy modalities have science proven effect today. We use it benefits for treatment in all stage of disease. Doctor specialist of physical medicine and rehabilitation is in firs line doctor and with his education can apply local medicaments and prescribe medicament also.

My personal experiences date back to 2000 year. when I published my first paper related to the application of cold in the treatment of swelling and pain in rehabilitation.

Pain in dentistry is a significant symptom, which is often one of the strongest symptoms. It can occur for several reasons such as neuralgia, inflammation, swelling or postoperatively, as well as in temporomandibular dysfunction (Leung et al., 2024).

The aim of our presentation is to present non-pharmacological treatments of pain in dentistry and in postoperative conditions in dentistry follow with pain.

Material and Method

To achieve our goal, which physical and alternative methods can be used in the treatment of pain in dental medicine, we started from personal experiences of the usual way of treating pain according to the stage of the disease. Another research direction was the classification of the applied treatment according to its medical and physical category of modality. Wanting to find out what the state of their use is, we researched already published papers with a time period of 5-10 years ago. We consulted 35 papers. The data that were obtained are presented according to the type of modality, disease and therapeutic effect.

Results

The treatment of pain in dental medicine is analysed as treatment of dysfunction of the temporomandibular joint (TMJD) with application through the mouth, treatment of mucous membranes in the mouth and neuralgia; pain of various aetiologies in the oral cavity (Leung et al., 2024).

The use of electric current is showing in table 4. Treatment with sonophoresis and shock wave therapy is showing in table 5. Treatment with light therapy is showing in table 6. Treatment with thermotherapy in table 7, treatment with electromagnetic field, acupuncture, aromatherapy and taping bands in table 8.

Table 4: The use of electrical modulation in treatment of dental pain

Type of current	Disease	Effect /dosage
Iontophoresis	• Pain in dental paediatrics • Pain by adult population • Treatment of TMJD (applicate by skin).	• Iontophoresis of Lidocaine, • Local, effective by anxiety of needles. (15-30min) (Kubala et al., 2022; Johnson , 2017)
Interferential current	Treatment of TMJD (applicate by skin).	• two electrodes 15 min.
TENS (Pihut et al., 2023; Roberts & Cross, 1999)	• Treatment of TMJD (applicate by skin). • Trismus, • muscles gymnastic	• Two electrodes 15 min. • 1-2 time a day.

Table 5: Treatment with sonophoresis and shock wave therapy

Type of treatment-sono therapy	Disease	Effect /dosage
Sonophoresis (Senel et al., 2019)	• Pain by adult population • Treatment of TMJD (applicate by skin).	Decrease inflammation and pain. Application with gel Lidocaine or some NARS in gel, 5 min. daily, 0.3w power, discontinued wave.
Extracorporeal Shockwave (Kim et al., 2019; Carroll et al., 2014)	• Treatment of Temporomandibular Joint Osteoarthritis (applicate by skin). • In oral mucosa, Applied on Pre-Surgical Phase of Distraction Osteogenesis	contact gel, reduce pain after inflammation stage, makes tooth extraction easier and therefore less painful.

Table 6: Treatment of pain with LLLT

Type of treatment-Low level laser therapy Wave 630-1080nm	Disease	Effect /dosage
Red LLL (Hui et al., 2021)	Pain by adult population Treatment of TMJD (applicate by skin).	Decrease inflammation and pain. 12mW power, Frequency 0-100 Hz, 30 sec. by point. Total daily time 3 min. Seria of 10 days.
Infrared LLL (Hui et al., 2021)	Pain relives of neuralgia, Pain after surgical treatment, extraction of tooth, sensitivity of mucosa after intervention on tooth.	Decrease pain, stimulate repairing of mucosa, stimulate postsurgical wound healing, 20 mW power, Frequency -no, and 200 Hz, 30 sec. by point. Total daily time 7 min. Seria of 10 days.

Table 7: Treatment with thermal therapy

Type of treatment-	Disease	Effect /dosage
Ice, cold, Cold air (Park et al., 2025) Cold plasma (Banaszak et al., 2024; Lata et al., 2022)	• Pain by adult population, • Treatment of TMJD (applicate by skin). • Treatment of postsurgical swelling • Cold air in mouth • Cold plasma	• Application of orthosis with cold effect, 1o min, with pause 15 min, repute many times a day. In acute stage of pain, first 1-2 days. • To culling post operative area in mouth, 30 seconds, repute many times a day. • Before surgical intervention, and implants applying.
Warm (Mayer et al., 2024)	Treatment of TMJD (applicate by skin) in chronic stage	Application of infrared-Solux lamp, 5 min, on face, 10 cm. distance, 1-5 days.

Table 8: The use of electromagnetic field, acupuncture, aromatherapy and taping bands

Type of modality treatment	Disease	Effect /dosage
• Electromagnetic field (Watarai et al., 2004) • Magnetophoresis-drag delivery with electromagnetic field (Müller et al., 2023)	• Pain in dental paediatrics • Pain by adult population • Treatment of TMJD (applicate by skin and mucosa).	• Application by skin or mucosa with contact gel in which is diluted drug. Input local in treated pain area. • Power 10mT, 15min, frequency-continual.
Acupuncture (Al-Moraissi et al., 2023; Ballon Romero et al., 2023; Benli et al., 2023; Kaya et al., 2023)	• Needling-on acupuncture points on skin, • Electroacupuncture pen- on acupuncture points on skin, • Laseropuncture • Electroacupuncture-with connection of needer frequent interferential current of 50-100Hz,	• Treatment of pain on skin points, • Analgesia -before surgery, pain relive after surgery, 30 min.,
Aromatherapy (Czakert et al., 2024; Pławecki et al., 2023)	• Inhalation or aromatic oil, • Supplements of aromatic oil, • Aroma massage, • Rinse mouth water	• A few times in day, treatment by depended of oil form of application. 1-7 days. • Effective oil: clove chamomile, black seed, • Caps with frankincense and curcuma
Taiping bandages (Golkar et al., 2023; Tsai et al., 2022)	Application with stretching effect from pre auricular to lateral neck side in way of fossa supraclavicular is.	It is applicate, and can put out before some treatment with physical therapy or stay permanent.
Lymph manual drainage (Ozdemir et al., 2021)	Area of pre auricular lymph nodal, occipital, retro auricular, submandibular and neck nodal drainage	Reduce sweeling and local compression so indirectly decrease pain. Special application of manual drainage, once on day, since it reduces complete.

Conclusions

Physical medicine and rehabilitation is one of the oldest medical sciences, which has roots in alternative medicine. Today's scientific research proves the effect of many modalities in reducing pain, as an unwanted experience of every person. Its implementation in dental medicine provides the opportunity for a combined effect of basic dental treatment and non-pharmacological physical treatment in reducing the suffering of patients and faster recovery. Every modern doctor of dental medicine should know and apply it in order to have a greater therapeutic effect.

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