

Combination of electrotherapy treatments, options, indications and contraindications

Application of two or more types of energy. Typically:

1. US+Low frequency current (DD, Träbert, Leduc)
2. Us+Medium frequency current
3. US+TENS
4. Electrical massage

Combinations of electrotherapy treatments can be used to avoid adaptation in chronic patients, and to alternate between analgesic and irritant effects. Mid-frequency and TENS are most often used.

One example is diadynamic CP variant, in which after 1 second jumping occurs between 50 Hz (contraction) and 100 Hz (relaxation). It is used locally for post-traumatic and post-operative conditions with subacute and chronic edemas.

TENS can for example be used with four electrodes instead of two, in order to treat both local and referred pain at the same time.

Indications are patients who use electrotherapy for an extended time, so that accommodation must be avoided.

There do not appear to be any specific contraindications for combination therapy other than those for the individual modalities. general contraindications for electrotherapy counts. They are pacemaker, pregnancy, allergic reaction to electrodes and application over the anterior aspect of the neck or carotid sinus.

High frequency electrotherapy treatment; characteristics, indications, contraindications

High frequency therapy is contactless and use frequency of electromagnetic field over 100 000 Hz. Darsonvalization is high voltage and low intensity while diathermy is low voltage and high intensity.

Frequency of this therapy could interrupt radio, TV or telecommunication signal, so for this reason, only a few frequencies are allowed.

These currents are generated in oscillatory circuit.

Capacitor creates capacity electromagnetic field and coil creates inductive electromagnetic field. Frequency depends on capacity of capacitor and on induction of coil. The part targeted for therapy is placed among two electrodes.

Darsonvalization is high-frequency electromagnetic field that creates electrical discharges.

When the applicator is very near to human skin, discharges are able to skip on skin. Effects are genesis of ozone, decrease of pain, emotional impact and aromatherapy.

Diathermy uses high-frequency electromagnetic field with low voltage and high intensity for contactless warming of deep tissues. Electromagnetic field is absorbed by tissues and is transformed in thermal energy inside of human body. Because of this, skin is not getting warm.

Shortwave diathermy has wave length of 11,05 m in Europe. Effects are anti-inflammatory by decrease of leukocytes at the beginning but following significant increase of leukocytes. Higher migration of leukocytes, higher phagocytosis and significant bactericidal effect. Increase of glycemia at

the beginning, but following significant decrease. Destruction of thermosensitive tumors. It increases extracellular levels of CA2+.

Capacitive application is when part of human body is placed among 2 electrodes. Metallic implants are not warmed, but there is significant increase of temperature in contact places.

Inductive application is when coil or inductive cable is used as an applicator. Generates whirling currents which are able to warm tissues.

Two types of whirling currents:

Closed Foucault electrical currents. Make the main thermal effect. The most of these currents are generated in the most conductive tissues (muscles). Metallic implants are warmed.

Inductive currents. In tissues is created the own induction of electrical field and electrolytic current. Other thermal effect and also non-thermal effects. Adipose tissues are extensively warmed, but is possible to reduced them by conductive lattice.

Time of application for SWD depends on type of illness. Very often are indicated chronical stadiums. Time of application is mostly 15-20 minutes.

Positive step is recommended only in time not in intensity.

Frequency is 3 times per week and together there should be 15-20 procedures. Distance from body should be 1-2 cm for superficial layers, 3-5 cm for deep layers with equal surface and 6-10 cm for deep layers with unequal surface.

Contraindications are acute inflammations, neuralgia, danger of bleeding, thromboflebitis, gravidity, application on testicles, tuberculosis, malignant tumors, cardiostimulators, malfunction of sensation, big swellings, metallic implants and fever.

Physical therapy in systemic diseases- justification and treatment objective

Several systemic diseases will have an overall symptomatic reaction with fever, so that we need cryotherapy and joint mobilization and manipulation as well to restore ROM and prevent further complications. The goal is to reduce the symptoms. A thorough examination is important, because a range of symptoms and overall pain can mask other simpler and single diagnosis that are not related to the systemic disease. Anamnesis will be very important.

Modalities for infectious inflammation include hydrotherapy (whirlpool, underwater massage, aquatic therapy) and ultrasound for its anti-inflammatory effects. Stretching, exercising and post-isometric relaxation is helpful to prevent flexion contractures and atrophy from prolonged immobilization. For example after initial hospitalization to detect and treat the disease.

30.2. Physical therapy in internal medicine

Physical therapy will depend on which disease we are talking about. Internal diseases can be ischemic conditions, gastrointestinal disorders, pulmonary disease, rheumatoid disease, diabetes mellitus, obesity, haemophilia, osteoporosis and endocrine disorders.

Many of these conditions are not treatable with physical therapy alone, but needs medical intervention as well.