

User:Pedro Tapadinhas

Cryotherapy is the local or general use of low temperatures to treat a variety of benign and malignant tissue damage (lesions) during medical therapy. The term of “cryotherapy” came from the Greek cryo, meaning cold, and therapy, meaning cure. The use of this technic dates to as early as the 17th century.

The Medical use of cryotherapy is based on the tissue changes induced by subfreezing temperatures. The goal of this technic is to decrease cellular metabolism (growth and reproduction), greatly increasing the cell survivability. Eventually, with the use of even more extreme temperatures, the therapy can be used to destroy cells through the crystalization of the cytosol (intracellular fluid). The living tissue responds to extremely cold temperatures through ice formation both within cells and also extra cellular fluid. This subfreezing temperatures will eventually cause ice formation within small blood vessels, interrupting blood supply to the adjacent cells. A combination of these factors eventually destroys the living tissue through ischemia and necrosis, inducing inflammation as a response to the cell death. The malignant tissue can be therefore destroyed and easily removed, avoiding the need of an evasive procedure.

However, not all interventions are as drastic as to end in cell death. One of the main application of this technic consists on the decreasing of pain of the patient also helping on the decreasing of spasms. These results can be achieved by the exposure of the patient to extremely low temperatures during a really short period of time. This short period of time prevents the already explained crystalization of the cytosol, however, due to the release of hormones from the endocrine system of the human body, states of pain relief and muscle relaxation.

The leading technic branch on the use of cryotherapy is the Cryosurgery which will later be explained. However, eventually, other branches like “Cryogenic Chamber Therapy” and “Cryotherapy in Pain Relief” are also practiced and commonly used.

Practiced Techniques:

Therapy's Name	Method	Objective	Side Effects
Cryosurgery	Application of extreme cold to destroy abnormal or diseased tissue. Usually Liquid Nitrogen is used to freeze the tissues at the cellular level;	Used to treat most especially skin conditions like Warts (rough growth); Moles (type of melanocyte); Skin Tags (small benign tumor that forms on the skin);	The procedure is often used because of its efficacy and the really low rate of side effects. However, ulcers and blisters, leading to pain and infection, scarring (especially if the freezing was prolonged) and changes in skin color, can temporarily occur.
Cryogenic Chamber Therapy (relatively new modality of cryotherapy)	Administered through the use of a cryogenic chamber for a short duration (less than 3 minutes). Chamber is cooled, typically with liquid nitrogen, usually to a temperature of approximately -120°C. The patient is protected from acute frostbite with clothes for the extremities of the body. After the 3 minutes, the skin temperature should have dropped to about 12°C. The core body temperature remains unchanged though.	The treatment improves a variety of conditions such as psychological stress, insomnia, rheumatism, muscle and joint pain, itching and psoriasis (chronic disease of the skin). The immediate effect of skin cooling and analgesia lasts for 5 minutes, but the endorphins release from the very own body may sustain this effect of pain and inflammation suppress for weeks.	The 3 minutes spent inside the chamber are relatively uncomfortable for the patient. Despite being the treatment done under controlled circumstances, the body itself, when exposed to the -120°C feels the savage experience resulting in a great discomfort for the patient.
Cryotherapy In Pain Relief	It is used a method of localized freezing temperature to calm an irritated nerve. A probe is inserted into the tissue next to the affected nerve. The temperature of the probe drops to then effectively freeze the nerve.	The nerve freezing results in its inactivation, therefore resulting in the relief of the painful nerve irritation.	It sometimes can leave the tissue affected with unusual sensations, such as numbness or tingling, or with redness and irritation of the skin. These effects are generally temporary.

Sources: <http://www.medicinenet.com/cryotherapy/article.htm> <http://en.wikipedia.org/wiki/Cryotherapy>
<http://www.webmd.com/cancer/cervical-cancer/cryotherapy-for-abnormal-cervical-cell-changes>