Effect of cryoneurolysis on pain

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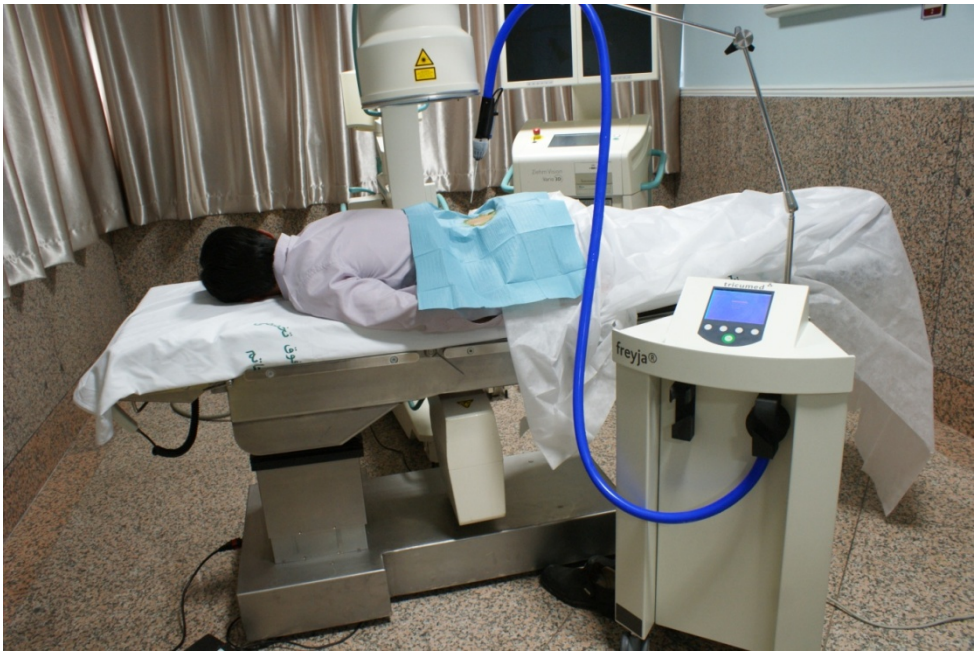
Pain is a common complaint of patients, and many physicians and patients only seek pharmacologic treatments to aid in pain relief; however, many nonpharmacologic interventions also exist with good potential for pain treatment (1).

Cryotherapy has been accepted for years as an effective, inexpensive and safe intervention for pain management after many acute injuries (2, 3, 4). Cryoanalgesia (the use of cold to provide anesthesia or analgesia) is the oldest anesthetic and analgesic still in current clinical use (5).

Cryotherapy increases the threshold of pain and induces physiological changes. It influences hemodynamics, metabolism, and neural control (reduction of nerve conduction velocity and muscle tone). The effect on nerve conduction can be altered by gender, age and, more pertinently, skin temperature (6). Due to biorhythm, cold application seems to be more effective in the afternoon (7).

Cryoneurolysis (cryoanalgesia) causes its effect by freezing of nerve segments -60 to -80 degrees centigrade for 1-3 minutes, repeated two to three times. This will cause transmission interruption of pain stimuli along the nerve and transient prevention of nerve fibers of pain especially those which are not myelinated or have a very delicate sheath for 3 months or more. This is probably the most benign of the neurolytic procedures, with a very low incidence of neuritis, although the risk of neuropathic pain is not zero (8, 9).

Based on the literature, it can be concluded that cryoanalgesia is a safe, effective and repeatable method for relieving pain in selected cases. Albeit it is evident that always pain treatment needs an interdisciplinary view and implementing a therapeutic procedure is dependent on the conditions of the individual patient.



Shefa interdisciplinary pain center has a sophisticated cryodenervation device Freyja-tricumed which is applied by qualified doctors and technicians. The cryolysis procedure for pain relief is under the supervision of Professor Mohsen Mohadjer.

The cryoprobes of the device are powered by nitrous oxide. Cryoneurolysis lowers temperatures by expanding the compressed gas from a small chamber into a larger one at the end of the probe. A small skin incision is required. The probe has an outer diameter of 2mm, and a vacuum-insulated shaft to protect the adjacent tissue. The low temperature -60 to -80 degrees centigrade is achieved in just proximity of the target peripheral nerve. Time is about 70 seconds for each pulse. For small nerves just one pulse is applied while several such pulses are required on larger nerves.

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