Case Report

BIOMEDICAL Journal of Scientific & Technical Research

ISSN: 2574 -1241

DOI: 10.26717/BJSTR.2021.36.005883

Use of Magnetotherapy in Post-Irradiated Skin Ulcer: About a Case

Juan Carlos Álvarez Rodríguez[1]*, Alicia Tamayo Figueroa[2] and Yasnay Bacallao Prado[3]

[1]*Degree in Defectology, Physiotherapist, Assistant teacher, Cuba*

[2]*Degree Specialist in Orthopedics and Traumatology, Instructor teacher, Cuba*

[3]*Degree Specialist in Orthopedics and Traumatology, Comprehensive General Medicine Specialist, Cuba*

***Corresponding author:** Juan Carlos Álvarez Rodríguez, Degree in Defectology, Physiotherapist, Assistant teacher, Cuba

ARTICLE INFO

Received: June 09, 2021

Published: June 18, 2021

Citation: Juan Carlos Álvarez Rodríguez, Alicia Tamayo Figueroa, Yasnay Bacallao Prado. Use of Magnetotherapy in Post-Irradiated Skin Ulcer: About a Case. Biomed J Sci & Tech Res 36(4)-2021. BJSTR. MS.ID.005883.

ABSTRACT

Ewing's Sarcoma is a tumor of malignant etiology that appears more frequently in men located in the diaphysis of the long bones, it is treated with chemotherapy and radiotherapy at high doses which can cause burns on the skin and ulcers which can be treated various. This work aims to demonstrate that magnetotherapy can be another tool in the treatment of these ulcers. We present a case of a patient with Ewing's Sarcoma of the right tibia treated surgically with curettage and filling with PMMA (surgical cement) followed by oncological treatment with polychemotherapy and high doses of cobalt therapy who, after a trivial trauma to the leg, suffered a small, ulcerated lesion rebellious to all treatment. Magnetotherapy treatment was applied, achieving healing of the lesion. Magnetotherapy achieves tissue regeneration having an important therapeutic value in the treatment of ulcers.

Keywords: Magnetic field; Sarcoma; Treatment

Introduction

The defects or loss of substances that appear in the skin after treatment with cobalt therapy are usually difficult to solve since, given the etiology of the lesions that require such treatment, it is not feasible to apply some treatments that are currently in vogue for ulcers [1] such as the application of Heberprot, since it stimulates cell proliferation and vascular neoformation, the production of fibroblasts to cover the defects. The application of iodopovidone because after ten days it produces irritation of the skin, the application of creams or ointments also tends to irritate the skin and soft tissues [2]. Magnetotherapy is a procedure of physical medicine that studies the possibilities of treatments for different diseases through the influence of the magnetic field in the body [3], its interaction with the tissue and biological actions obtains important therapeutic effects in those cases in which it is applied. Its use in the treatment of post-irradiated skin ulcer provided a wide skin coverage [4-6]. Faced with this case in which multiple therapeutic options had been applied to achieve closure of the ulcerated lesion with creams, ointments, antibiotic therapy, curettage of devitalized tissue and closure by second intention without achieving the objective, it was decided to apply magnetotherapy as a last alternative method achieving the desired end.

Clinical Case

A 33-year-old male patient treated surgically for Ewing's sarcoma of the right tibia that was filled with surgical cement and radiant treatment was applied. At the age of 2, he suffered a trivial trauma to the front of his leg, which caused a small ulcer in that area. He underwent treatment with curettage, secondary intention closure, antibiotic therapy, debridement with delayed closure, resection of the overflowing cement, application of local antibiotics, which always caused the ulcer to open (Figure 1). It was decided to consult with Physical Therapy and Rehabilitation and began to apply treatment with a magnetic field, dosed as follows:

Figure 1: Ulcer on irradiated skin before treatment with magnetotherapy.

a) Intensity: 50 gauss.

b) Frequency: 23 Hz. 60%

c) Impulse shape: Sinusoidal.

d) Application time: 15 minutes for being local application.

e) Applicator type: Round transducer.

f) Treatment sessions: 15 daily sessions.

After the first 10 sessions, a healing with significant skin coverage was obtained. After 10 days of application, the area began to heal favorably (Figure 2), completing the treatment with this procedure, after which a satisfactory functional and aesthetic result was achieved.

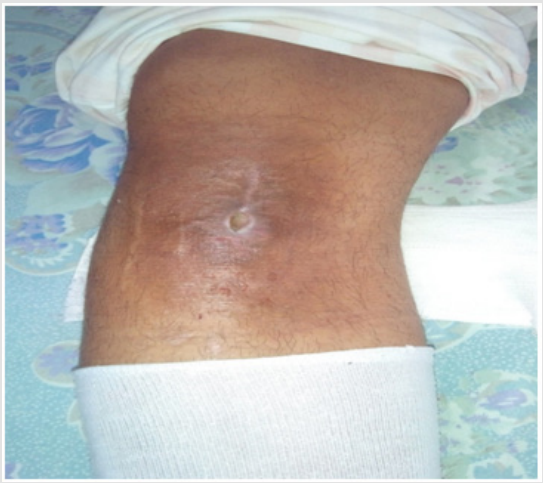

Figure 2: Piel después de 10 sesiones de magnetoterapia.

Discussion

The magnetic field is an isolated type of matter through which the relationship and reciprocal action between electric and mobile charges is carried out, which are manifested by forces of attraction and repulsion called Lorentz. All living beings that populate the planet are constantly subjected to this energy, since the earth generates them by behaving like a magnet, that is, we are living on a magnet. The magnetic field is established between a north pole and a south pole and its lines circulate from south to north. They are classified into natural (Planets: Sun, Earth, etc. Minerals: Magnetite, Siderite and others) and artificial (Magnetized metals: bars and horseshoes, horns and cylinders and Electromagnets: Local and regional). Its main therapeutic effects are anti-inflammatory, immune and tissue regenerating influence, the latter can be achieved at any depth level and not only limited to the skin. The healing of ulcers and wounds depends on agonist A2A Adenosine receptors, which with low frequency electromagnetic field treatments causes a significant increase in these receptors. Different effects can influence tissue regeneration through magnetotherapy, the induction of microcurrents and electromechanical stimulation, the opening of the circulation, the stimulation of the function of cellular elements in the sense of renewing all the damaged material as well as the stimulation of antioxidant systems.

Magnetotherapy treatment can last up to 30 sessions with even more encouraging results. We propose this regenerative therapeutic method that does not have adverse effects for this type of localized damage in irradiated skin that does not respond to surgical or drug treatment, achieving a prompt tissue repair with an optimal aesthetic and functional result. There are other procedures in Physical Therapy for wound and ulcer healing such as Ultra-high Frequency and laser therapy, but in both cases, these stimulate cell proliferation and new vessels, and considering that the case in question has as its underlying disease. In a malignant neoplasm, it is not feasible to apply a therapy that favors these processes, while Magnetotherapy bases its therapeutic efficacy on the processes of differentiation and cell regeneration.

Conflict of Interests

The authors declare that there are no conflicts of interest.

References

1. Schajowikcz F (1982) Tumors and pseudo-tumoral lesions of bones and joints. Panamericana. Buenos Aires.
2. Terry Canale, S Campbell (2005) Orthopedic surgery. 9th (Edn,). Elsevier. Madrid.
3. Martín Cordero, Jorge E (2008) Therapeutic physical agents. Medical Sciences. Havana.
4. Gnatz Steve M (2014) Manual of Physical Medicine and Rehabilitation, 2nd (Edn). Mc Graw-Hill. Interamericana.
5. Michaelson SM (2014) Bioeffects of high frequency currents and electromagnetic radiation. In Lehmann JF. Therapeutic heat and cold. 4th (Edn,). Baltimore.
6. Guy AW, Lehmann JF, Stonebridge JB (2012) Therapeutic applications of electromagnetic power. Proc. IEEE 62(1): 55-75.

ISSN: 2574-1241

DOI: 10.26717/BJSTR.2021.36.005883

Juan Carlos Álvarez Rodríguez. Biomed J Sci & Tech Res