CASE REPORT

DEEP BURNS CAUSED BY FAR-INFRARED RAYS IN A CHIROPRACTIC SALES CENTRE

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SUMMARY. We report the case of a patient who sustained a deep burn in the right ankle as a result of using far-infrared rays for the management of chronic pain in that site. The burn was sustained in a chiropractic sales centre. We recommend medical supervision in such centres and strict adherence to safety precautions.

Introduction

In the last few years there has been a significant increase in the number of centres that provide far-infrared heat treatment and sell the equipment.

The action mechanism of far-infrared rays is related mainly to vasodilatation, or increased blood flow and local temperature. The penetrating infrared energy brings nutrients and oxygen to the soft tissue region being treated and at the same time stimulates the removal of accumulated toxins.

Several studies have been performed showing the effects of such treatment on the management of chronic pain,\(^1\) chronic fatigue syndrome,\(^2\) and the improvement of impaired vascular endothelial function in the setting of coronary risk factors, suggesting a therapeutic role for it in the treatment of patients with risk factors for atherosclerosis.\(^3\)

Other studies have shown its effects on tumour cells\(^4,5\) and also on cutaneous leishmaniasis.\(^6\)

We report the case of a patient who used far-infrared rays in a specialized centre to reduce pain around her right ankle, but sustained deep burns in that site.

Case history

A 48-yr-old lady had been complaining of pain around her right ankle for many years. She related the pain to an old fracture that occurred at the lower end of her right tibia about 10 years previously. The patient went to a centre where they sold beds that radiate infrared rays and where, as a promotion offer, they were offering 40-minute treatment sessions free of charge so that people could try the beds before buying them.

There was an additional attachment of far-infrared jade nodes connected to the bed which could be applied directly to areas requiring additional local infrared rays (Fig. 1). The patient applied this piece with jade nodes to her right lower leg for about 40 minutes and sustained deep burns there. The patient had dressings applied in a health centre for more than two months but as the burn was deep it did not heal. She underwent debridement and skin grafting on day 68 post-burn in our department. The graft was harvested from the right thigh. The graft take was good and the patient has made a good recovery (Fig. 2).

Discussion

Solar energy covers a broad energy band including gamma rays, X-rays, ultraviolet, visible light, infrared, and...
microwaves (Fig. 3). Only a small amount of solar rays are visible as colours. The greatest amount of the sun’s energy output is in the infrared segment of the spectrum.

The infrared segment of the electromagnetic spectrum is divided into three segments by wavelength, measured in microns or micrometers (1 micron = 1/1,000,000 of a metre); 0.076 ~ 1.5 microns = near or close; 1.5 ~ 5.6 = middle or intermediate; 5.6 ~ 1,000 = far or long wave infrared.

A narrow spectrum between 14 and 4 microns has been shown to have particularly beneficial effects on the body. Visible light is mostly bounced off the skin surface. Near-infrared is mostly absorbed at skin level and raises the skin temperature while far-infrared (FIR) can penetrate up to 4 cm (about 1.5 inches), exciting the vibrational energy of molecules and resonating with cellular frequencies. We cannot precisely perceive the deep heating effects of FIR because our body’s ability to sense heat functions mainly at skin level.

There are many centres nowadays selling beds containing jades that act as a powerful transformer, changing light from helium projector bulbs into FIR light. Many of these centres allow customers to try the beds for a number of sessions before buying them. The beds have additional jades attached to them which can be applied directly over the areas requiring special attention. Unfortunately, many of these centres are run by salesmen and other non-medical staff.

**Conclusion**

In spite of claims of their safety, FIR rays can nevertheless cause deep burns, as reported in this case, especially if the FIR jade nodes are applied on the same site for a long period. Continuous change of the site of these nodes is recommended, if they have to be used. Medical supervision should be provided in such centres, with clear instructions on proper use. Safety precautions should be provided and appropriate first-aid management procedures should be available.
RÉSUMÉ. Les Auteurs présentent le cas d’une patiente atteinte d’une brûlure profonde à la cheville droite après avoir utilisé les rayons infrarouges lointains pour la gestion de la douleur dans ce site. La brûlure a été infligée dans un centre commercial chiro-pratique. Les Auteurs recommandent pourtant la présence d’une supervision médicale dans ce type de centre et une observation stricte des normes de sûreté.

BIBLIOGRAPHY


AWARD OF THE G. WHITAKER INTERNATIONAL BURNS PRIZE, PALERMO, ITALY, FOR 2007

At a meeting held on March 26, 2007, at the seat of the G. Whitaker Foundation, Palermo, after examining the scientific activity in the fields of research, teaching, clinical organization, prevention and cooperation presented by various candidates and in consideration of the high level of the candidates, the Adjudicating Committee unanimously decided to award the prize for 2007 to Professor NAOKI AIKAWA, General Director Emergency, Critical Care & Trauma/Burn Services, Keio University Hospital, Tokyo, Japan.

The prize is awarded with the following motivation:

“Professor Naoki Aikawa was born in Kanagawa, in Japan. Within a very few years of taking his medical degree in 1968, he began to develop an interest in the burn disease and from 1973 to 1976 he attended the Clinical and Metabolic Research Laboratories and the Harvard Medical School Clinical Surgical Service of Burn Trauma at Massachusetts Hospital, directed by Professor J.E. Burke, who defined him one of the best Research Fellows. He later completed his training at Keio University Hospital, Tokyo, holding the position of Resident and Chief Resident in General Surgery. From 1988 to 2003 he held the posts of Associate Director and Director, Emergency, Critical Care & Trauma/Burn Services, Keio University Hospital.

“Professor Aikawa’s university teaching career began in 1988, first as Associate Professor and subsequently, in 1992, as Professor, Department of Emergency & Critical Medicine, School of Medicine, Keio University, the position he holds today.

“His training stimulated his interest in study and research in various aspects of the burn disease: initially in the treatment of burn wounds, diagnosis, and the treatment of infection in extensively burned patients and later in the humoral immune response, which he called ‘a cytokine storm’, the shock and reanimation phase in extensively burned patients, and the prevention of renal damage, damage due to inhalation, and multi-organ failure, as a complication of sepsis.

“His findings, published in more than 400 papers, in the leading scientific journals and presented at top-level international congresses, have become points of reference for our knowledge of the basic physiopathological variations that occur in the course of the burn disease. In view of his scientific activity he was elected to the Board of Direction of the International Burn Foundation and to the Editori-al Board of the most prestigious national and international scientific journals.

“As Director of Emergency, Critical Care & Trauma/Burn Services, his outstanding clinical skills were expressed on the occasion, among others, of the dramatic Kobe earthquake, when together with his team he treated large numbers of burned and polytraumatized patients in difficult and dramatic circumstances.

“As Professor of the Department of Emergency & Critical Care Medicine, School of Medicine, Keio University, he has carried out teaching and training activities at the highest level for numerous young students and doctors; he has also been appointed to the position of member of the Ministry of Education Doctor’s Thesis Approval Committee and member of the Medical Profession Advisory Committee.


“The official prize giving will take place in Palermo at the G. Whitaker Foundation in October 2007 in the presence of authorities and representatives of the academic, scientific and cultural world.”