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GENERAL ASPECTS

The entity of the phenomenon “chronic ulcers” is important, for the number of patients involved and for the duration and necessary resources for their treatment: the chronic cutaneous ulcers represent a pathology of elevated social significance in terms of public expense (in Tuscany the ordinary cost for treatment is 190 euros for the first day and 459 euros up to the sixth day; the Day Hospital treatment costs 264 euros a day) and loss of working days. Above all, chronic ulcers are painful, weakening and they reduce the quality of the patient’s life.

Every effort of the hospital care management is focused on not only the patient’s healing but the containment of the expense as well, in addiction to the introduction of new methods that accelerate the times of recovery and reduce the costs of the materials used.

In the last few years, the importance of the Photodynamic Therapy (PDT) has emerged, particularly in the treatment of pathologies like tumors, cutaneous inflammation and infections (viral and bacterial), but above all the PDT has been noticed for its capacity to induce healings with complete restitution of normal tissue and to destroy the biofilm in cutaneous wounds (the most important cause of chronic infection and bacterial resistance).

AIM OF STUDY

From observations above the idea was born to treat chronic cutaneous ulcers, particularly those of the legs.

Some initial studies exist regarding the effects of PDT, but just single cases. Our group intends to study the feasibility and effectiveness of PDT in treatment of chronic cutaneous ulcers from chronic venous hypertension and insufficiency.

Our goal is the “everything or nothing” healing effect, and the study of some fundamental aspects in the processes of healing, the production of MMP1 and MMP3, cytokines and growth factors BFG, PDGF, TGFβ in fibroblasts and in the chelatocinin, and the quantitative variations of two types of collagen.

Our final goal is to compare the times of recovery among Photodynamic Therapy and “traditional” therapy.

CONCLUSIONS

We present an alternative therapeutic strategy for treatment of infected ulcers with PDT, in order to kill the bacteria (St. Aureus, St. Epidermidis, Str. Poygenes, Pioiamos, C. Allicium,...) even if resistant to antibiotics or “protected” with the biofilm. Ulcer’s healing is also due to the possibility of PDT to induce the production of new collagen: 5-ALA, light and Oxygen induce in the collagen the formation of MMP1 and MMP3.

MATERIALS AND METHODS

Selected patients with chronic venous ulcers of legs (from out-patients’ department of “S. M. Nuova” Hospital in Florence – Italy) were treated with 5-ALA (occlusion dress). After 6-10 hours the formation of Protoporphyrin IX was verified with UV light. The ulcers were illuminated with LED - red light for 5 minutes (180 - 210°). After the medication the patient was discharged. Applications were usually weekly, until complete healing.

PRELIMINARY RESULTS