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Bioptron® Light Therapy and Thoracophrenolaparotomy Wound Healing in Patients Operated Due to Cardiac Carcinoma


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Summary

In the period of 16 months, 52 patients have been treated due to cardiac carcinoma using left thoracophrenolaparotomy approach. In 26 patients a BIOPTRON® light therapy has been added to the standard way of wound treatment, in the period of ten days. In other 26 patients the operative wound has been treated in standard manner. Operative incisions treated with BIOPTRON® light therapy gave excellent and satisfactory results in 80.77 % and 19.23 % patients respectively. In the control group excellent results have been observed in 53,85 %, satisfactory in 26,92 %, while unsatisfactory and bad in 15,38 % and 3,85 % patient respectively. Statistical analysis showed significant difference between compared groups. In conclusion, BIOPTRON® light therapy showed no side effects and it’s application combined with standard treatment, significantly decreases the incidence of seroma and inflammation.

Introduction

Different effects of light waves, different tissues and organic systems
as well as diseases and pathologic conditions, represent a surrounding in which light constantly proves great potentials. Investigations concerning the positive effects of the light therapy had gained much appreciation in the last decade. Positive effects of the Polarized Polychromatic Incoherent Low Energy Radiation (PILER) has been documented in numerous medical indications and especially for it’s effect of better and faster wound healing, shortening the period of wound pain and reducing it’s intensity. In the last few years BIOPTRON® light therapy, being most advanced type of PILER therapy, has shown excellent results in treatment of different skin problems. Polarized BIOPTRON light therapy is functioning over the well oxygenated surface (high concentration oxygen from Oxy spray) directly influencing following processes: strengthening the defensive mechanism (cellular immunity); increasing concentration of imunoglobulins (humoral immunity); increasing of collagen and elastic fibers production; increasing and fastening the proliferative cellular phase of the inflammatory processes and by antitoxic influence on the free radicals. The aim of this study was to investigate the effects of the PILER therapy on the thoracophrenolaparotomic surgical wound in patients radically operated due to cardiac carcinoma.

Materials and Methods

In the period between January 1st, 1999 and April 1st, 2000, we investigated the quality of wound healing in 52 patients that have been operated due to cardiac carcinoma through the left thoracophrenolaparotomy approach. In all patients total gastrectomies and distal esophagectomies with systematic D2 lymphadenectomy and Roux-en-Y anastomosis have been performed. Using prospective randomized selection method, in 26 patients a BIOPTRON® light therapy has been added to the standard wound treatment, in the period of ten days. In other 26 patients the operative wound have been treated in standard manner. Average length of thoracophrenolaparotomy in both groups was 42±3.5cm. Once a day application of the PILER therapy started on the 2nd postoperative day it lasted for 10 days. The duration of the light therapy application was 5 minutes and the distance from the incision to the PILER light apparatus (BIOPTRON 2) was 15 cm under the right angle. All patients have been treated in the same environment. Types of wound healing were divided in four groups according to the presence of seroma and infection at the 12th postoperative day: excellent, satisfactory, unsatisfactory and bad. Excellent wound healing was acknowledged as the one that healed without seroma or infection and the sutures were normally removed. Satisfactory results were obtained if wounds were found with minimal seroma content but without infection and sutures
were also regularly removed. Unsatisfactory wounds were described as one with seroma and infection in which suture removal was delayed for a few days. Bad result was described in wounds in which a large scale of infection was present with the consecutive fascia dehiscence.

Results

On the 12th postoperative day operative thoracophrenolaparotomy wounds treated with PILER light therapy healed excellent in 21 (80.77%), and satisfactory in 5 (19.23%) patients. In this group no unsatisfactory and/or bad results have been observed. In the control group (with no additional BIOPTRON light therapy) excellent results had been observed in 14 (53.85%) patients, satisfactory in 7 (26.92%), but unsatisfactory and bad in 4 (15.38%) and one (3.85%) patient respectively. Statistical analysis has shown that the above mentioned results are statistically significant (p > 0.05) regarding use of BIOPTRON light therapy. In none of the above mentioned patients side effects of the therapy have been noticed. All patients in whom the BIOPTRON light therapy was investigated are of chronic type in whom pathophysioplogical processes have been significantly disturbed. Their nutritive and absorptive as well as imunobiological function have been seriously compromised. Majority of treated patients are elderly, with significantly decreased regeneration potentials of the organism. These surgical procedures, on the other hand, are among most demanding in surgery, whose type, length of operation and possibility of complications significantly induces further stress to the patients.

Conclusion

Concerning our results and the above-mentioned facts, we can con-
clude that PILER light therapy is a very simple and effective additional therapy in treatment of surgical wounds. In patients operated due to stomach carcinoma in whom total gastrectomies with systematic D2 lymphadenectomies has been performed, we found that the application of BIOPTRON® PILER therapy significantly decreases the possibility of seroma or infection of the wound. No side effects of this therapy have been noticed. Application of this type of wound therapy significantly shortens the postoperative hospitalization. Finally, we can conclude that PILER light therapy should be added to the standard treatment of all surgical wounds in patients operated due to cardiac carcinoma. Also we can conclude, since we treated one of the most demanding groups of surgical patients, that since our results indicate excellent results, PILER light therapy could be successfully used in almost all kinds of surgical wounds.

References


