

Effect of Ozone Therapy and Boron-Containing Hydrogel on Necrotizing Fasciitis

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Abstract

The aim of this case report is to evaluate the possible role of ozone therapy and boron containing hydrogel (Sodium pentaborate pentahydrate 3%) in treatment of patients with Necrotizing Fasciitis (NF).

Keywords: Ozone Therapy; Boron; Hydrogel; Necrotizing Fasciitis

Introduction

A gas mixture comprising of ozone/oxygen used in medicine is known as medical ozone therapy which is a distinct therapeutic modality.

Case Report

Our patient was a 93-year-old female patient with the known history of diabetes mellitus. He was hospitalized in intensive care unit (ICU) with the complaints of swelling, erythema and purpura in the posterior part of the left thigh medially. The vital findings of the patient were stable, his general condition was good, cooperative and oriented. There was a wound measuring approximately 40 x 30 cm in size and containing a large tissue defect in the left thigh area. The wound was erythematous. He was taken to the anesthesia ICU for further monitorization and treatment with the pre-diagnosis of NF. Intermittent oxygen (O₂) was delivered through the nasal O₂ cannula, SpO₂ > 90. The values were; Leucocyte = 33.0 10³/mm³, C-reactive protein = 27 mg/dL, Urea = 128 mg/dL, Creatinine = 2 mg/dL. The magnetic Resonance Imaging of the left thigh revealed a significantly increased fluid among the muscular fascias and in the suprapatellar bursa entering the section area. The appearance was noted to be significant in terms of diffuse collection and cellulitis. The tissue ultrasound showed findings consistent with edema in the skin and subcutaneous adipose tissue with swelling and erythema findings medial to the proximal one-third of the femur. In line with the recommendations of the infectious disease specialist, appropriate antibiotics were selected for the patient. The therapy of imipenem, daptomycin and moxifloxacin was administered to the patient for two weeks. Afterwards, the antibiotic treatment was completed with linezolid for three weeks. The patient was treated with intramuscular and subcutaneous ozone every day along with the anti-biotherapy. In addition to the ozone therapy, boron-containing hydrogel was applied to the wound every day. The wound infection of the patient was determined to be limited to a total of seven-session ozone therapy and boron-containing hydrogel (Figure 1). The patient whose medical treatments were completed was discharged to the infection department.



Figure 1: a) First day of cure b) Seventh of the cure.

Discussion and Conclusion

A gas mixture comprising of ozone/oxygen used in medicine is known as medical ozone therapy which is a distinct therapeutic modality [1]. It has been reported that ozone therapy is effective on NF [2]. Boron-containing hydrogel promoted wound healing via complex mechanisms including stimulation of cell migration, growth factor expression, inflammatory response, and vascularization [3].

We administered ozone therapy and boron-containing hydrogel to the patient with NF. We suggest that ozone therapy and boron-containing hydrogel are effective in limiting the wound infection.

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