The Role of Low Adherent Activated Carbon Cloth Dressing (LA ACC) in Managing Necrotizing Fasciitis: A Case Study

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ABSTRACT

Carbon based dressing has been in wound care industry for many years, with main role of controlling wound odour. In recent years, there is emergence of modern activated carbon cloth dressing with improved antimicrobial, anti-inflammatory and wound healing properties. This case involves usage of a low adherent activated carbon cloth dressing (LA ACC) on 58 years old Malay gentleman with underlying DM who was diagnosed with left lower limb necrotizing fasciitis secondary to infected AKA stump. Wound treatment with super-oxidized solution, hydrogel and LA ACC was started on 8/8/19, with twice per week dressing change. On 19/8/19, patient was discharged from Hospital Shah Alam due to stable condition and wound infection is controlled, and wound dressing follow up at wound care unit, HKL to be done once per week. After 2 weeks, wound showed further improvement with significant healthy granulation tissue formation. LA ACC can be a good choice for cost effective wound management, which warrants additional studies.

INTRODUCTION

Wound management is becoming an increasing complex clinical practice that consumes significant amount of resources, which creates burden to both patients and health care system. In a study conducted at England, more than one in four hospital inpatients (26.8%) had a wound. The estimated cost of wound care was £15million to 18 million (About RM 77.2 million to RM 92.7million).1 Another study in United States reported that over 6.5 million patients with wounds cost the health care system US$25 billion (approximately RM104 billion) annually.2 Therefore, there is a growing need for innovative wound care treatments to reduce overall cost on wound management. Activated carbon has been used for many years in wound dressings, primarily for odour reduction, with no emphasis on anti-microbial and wound healing functions. This study highlights the use of a low adherent activated carbon cloth dressing, LA ACC (Zorfex LA, manufactured by Chemviron, UK) in managing large infected wound, and accelerates healing process.

METHODOLOGY

We present a 58 years old Malay Male with underlying DM on 2 types of OHA, was admitted to Hospital Shah Alam on 27/6/2019 due to diabetic ketoacidosis secondary to left foot wet gangrene, which BKA was performed on the same day. Later the patient had infection at BKA stump, which surgical debridement was done on 2/7/2019. As necrotizing fasciitis secondary to infected BKA sets in, left AKA was performed on 10/7/2019, with another 2 sessions of surgical debridement and shortening of left AKA stump done on 21/7/2019 and 27/7/2019, due to presence of slough all over the wound along with biofilm and necrotic tissue. Since admission, the affected area was treated with various local wound treatments, which include cleaning with super-oxidized solution, PHMB solution or flushing with povidone iodine before application of medicated paraffin gauze, with sodium alginate gel. On 8/8/2019, wound treatment with LA ACC was initiated, supported with super-oxidized solution and hydrogel, with twice per week dressing change.

RESULTS

On 19/8/19, patient was discharged from Hospital Shah Alam due to stable condition and wound infection is controlled, and wound dressing follow up at wound care unit, HKL to be done once per week. After 2 weeks, wound showed further improvement with significant healthy granulation tissue formation.

BASELINE (8/8/2019)
Wound measured at largest diameter: 20cm x20cm with depth of 6cm, very exudative wound with presence of slough and mild foul smelling odour.

DAY 25 (2/9/2019)
Wound is healing with healthy granulation tissue seen, exudate level is reduced with serous discharge, no sign of infection, epithelisation is seen at wound edges.

DISCUSSION

When applied onto a wound, LA AAC adsorb bacteria, locally released toxins and wound degradation products via electrostatic forces known as Van der Waals force, which is safe and does not cause cytotoxicity effect. LA AAC also controls inflammation by regulating MMPs (Matrix Metalloproteinases), which if the level is uncontrolled, which cause prolonged inflammation. Besides that, LA ACC promotes wound healing by means of conductivity, which can stimulate fibroblast and its migration to increase production of collagen and in turns granulation tissue formation.3,4 Due to presence of polyethylene net laminated on both sides of the dressing, LA ACC is extremely useful where adhesion between the wound and wound dressing could be a problem. Zorflex LA, manufactured by Chemviron, UK was used in this study.

CONCLUSION

LA AAC which is low adherent, with natural antimicrobial and anti-inflammatory properties, as well as ability to improve wound bed vascularity and promote granulation tissue formation via its conductivity, is good option for managing both infected and non-infected wounds. Additional studies are required to support its use for cost effective wound management.

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