Utilization of advanced antimicrobial extracellular matrix technology within the framework of antimicrobial stewardship

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INTRODUCTION

The availability of advanced tissue regeneration products in the field of wound care has enabled the implementation of more aggressive wound treatment strategies to address underlying wound pathology, rather than simply managing wound symptoms such as exudate and malodor. While traditional collagen dressings provide excellent moisture balance, modern advanced extracellular matrix (ECM) technologies provide a structural scaffold and are enriched with a variety of native tissue biological factors to rebuild missing or damaged tissues.[1] An antimicrobial ECM technology (ECM/Ag†) incorporating ionic silver, has shown effectiveness against both gram-negative and gram-positive bacteria, including multidrug-resistant strains.[2] Additionally, ECM/Ag has been shown to prevent the biofilm formation *in vitro*.[2]

METHODS

The following case series included a range of different wound etiologies and sought to evaluate ECM/Ag for the treatment of chronic wounds. All wounds were managed with best practice including wound debridement.

RESULTS

All wounds responded well to ECM/Ag with robust granulation tissue formation and advancement of epithelial tissues. Case 1 and 3 resulted in closure at 11 and 3 weeks respectively. In Case 2 the wound became 100% granulated and by week 13 had reduced in size by ~50%.

CONCLUSIONS

Closure of chronic wounds is challenging and external factors, such as infection or bacterial colonization of a wound, add to these challenges and intensify the barriers to adequate wound closure. Wound care practitioners, as they adhere to antimicrobial stewardship guidelines, need to consider the inclusion of antimicrobial ECM technology as an option particularly in the management of chronic wounds.

REFERENCES AND DISCLOSURES

†Endoform Antimicrobial Dermal Template (Aroa Biosurgery Limited, New Zealand). Product was provided by Aroa Biosurgery Limited (New Zealand);

1. Bohn, G.A., et al., Proactive and Early Aggressive Wound Management: A Shift in Strategy Developed by a Consensus Panel Examining the Current Science, Prevention, and Management of Acute and Chronic Wounds. Wounds, 2017. 29(11): p. S37-S42.

2. 2. Karnik, T., et al., Ionic silver functionalized ovine forestomach matrix - a non-cytotoxic antimicrobial biomaterial for tissue regeneration applications. Biomater Res, 2019. 23: p. 6.

CASE 1

43-Year old male. Diabetes Type II, neuropathy, charcot foot, hypertension. One-year old wound on plantar surface with confirmed osteomyelitis 3 months prior to treatment with ECM/Ag†

Week 0: 6 x 4.5 cm

Week 5: 4 x 2.2 cm

Week 6: 3.1 x 1.5 cm

Week 8: 1.9 x 1.0 cm

Week 9: 1.8 x 0.7 cm

Week 11: Closed

CASE 2

64-year old female. Diabetes Type II, hypertension, cirrhosis, MRSA + DFU osteomyelitis. DFU present for in excess of 24 months. Treated with ECM/Ag†

Week 0: 6 x 5.5 cm

Week 1: 5.5 x 4.5 cm

Week 2: 5 x 4.5 cm

Week 3: 4.5 x 3.8 cm

Week 6: 3.8 x 2.5 cm

Week 13: 3.6 x 2.0 cm

CASE 3 :

40-Year old female. Chronic wound post trauma related amputation. Treated with ECM/Ag†.

Week 0: 1 x 1 cm

Week 2:

Week 3: Closed