

A Case Report on the Usage of Broad Spectrum Antimicrobial Foam (RTD) in A Dressing of A Diabetic Foot Ulcer Wound

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Introduction

- Diabetic foot ulcer is a serious complication of diabetes mellitus and comprises about 1.2% among the Malaysian population. In managing these cases, limb salvage is the ultimate goal. However, addressing the local and systemic infection is a huge challenge unless this issue can be overcome, then limb salvage is not possible.
- In term of local control of infection, a few dressing material and solution has been recommended. These are mainly alginates, foams, hydro fiber, hydrocolloids, hydrogels, iodine based and honey based. However in certain cases, despite of adequate management of surgical debridement together with addition of appropriate intravenous antibiotics and topical antimicrobials, sometimes a wound will still shows no improvement.
- In this case, we are evaluating the usage of Antimicrobial Hydrophilic Polyurethane Foam Matrix (RTD foam) where other topical modalities of controlling infection have not showed any good outcome.

Case Report

- A 48 year old lady primarily presented with blister for 1 day prior to admission. On admission to ward, she was diagnosed with diabetes mellitus with unrecordable high dextrostix and necrotizing fasciitis of her left foot. Subsequently she went for extensive wound debridement on the same day.
- Post operative day 1, wound looks healthy and was cleansed with sodium hypochloride solution and irrigated with sterile water and primary dressing of silver hydrogel daily. However, the wound did not improved and she went for second debridement after about 10 days. Post debridement, silver alginate was used every 3 days. We also noted that wound was still sloughy every time of the 3rd day of change of dressing and ultrasonic debridement was done as well before the commencement of the next cycle of dressing. Tissue culture and sensitivity at day 5 post third debridement showed MRO and was only sensitive to Collistin, hence the correct type of antibiotic used. At this point, patient had been counseled multiple times regarding the possibility of limb amputation despite of all the remedial actions.
- However at day 14 post third debridements, patient was referred to wound unit and started on antimicrobial hydrophilic polyurethane foam matrix (RTD) dressing. After the first change of RTD foam, we noticed that the slough tissues significantly reduced and wound bed appeared more healthy. Hence RTD foam was continued for total of 6 cycles in ward. In view of good response to the dressing, decorticotomy was done and resume back with the same foam dressing for another 3 cycles and later on proceeded with skin grafting. Patient was on RTD foam dressing for total of 6 weeks until the exact skin grafting date.

Conclusion

- RTD foam should be considered as an option for local control of infection in wounds that showed no response to other type of treatment whether topical or systemic treatment as well.

Discussion

- Antimicrobial hydrophilic Polyurethane foam matrix (RTD) foam serves as high function of absorbent with combination of methylene blue, gentian violet and silver ion that are intergrated to a therapeutic blue foam. The foam has been structured and function in such a way as what it is made of. Methylene blue acts to attract all exudates whether bacteria or dead tissues into the dressing material. Gentian violet function as for antibacterial and antifungal as well as providing analgesic effect. Silver ion alginates function as to kills all the gram positive and negative bacteria as it binds to the cells in the presence of exudates. With all of these, it will promote a healthy wound bed as it clears the exudates, giving a good antimicrobial and antifungal effect, preventing formation of biofilm, non cytotoxic and reduced the burden on pain during dressing. In relation to this case where managing exudates and infection considered as a challenge, the foam does works well and helps in assisting the wound bed for skin closure. As in any cases of non healing diabetic wound ulcer with good diabetic control, the major issues in wound healing are usually involving the unstoppable wound infection with formation of slough, biofilm and unhealthy wound bed. When these issues not addressed first, epithelialization cannot take place as infection and moisture still has not settled and TIME concept cannot be achieved. This patient however showed benefit as after 6 weeks of trial with RTD foam, the wound bed can easily be prepared for next phase of wound healing and wound size reducing and manage to cover up the exposed bone and tendons. However, compliancy towards wound care and managing one's glucose level also important and play a key role in successful wound healing.

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Dorsal View



Before RTD



After 1st Cycle RTD (3 days)



After 2nd Cycle RTD (6 days)



After 8th Cycle RTD (24 days)



After 16th Cycle RTD (48 days)



5 days Post SSG

Medial View



Before RTD



After 1st Cycle RTD (3 days)



After 2nd Cycle RTD (6 days)



After 8th Cycle RTD (24 days)



After 16th Cycle (48 days)



5 days Post SSG