Charcot-Marie-Tooth, Foot Deformities, Osteomyelitis with Open Wounds on a Child

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Abstract

15-year-old female presented to the ER with an infected foot. Her history includes cardiac surgery at age 2 and Charcot-Marie-Tooth disease. She underwent surgery on November 29, 2001, for cavus foot deformities. She had another surgery February of 2002 for debridement and treatment for osteomyelitis. This left her with two wounds, both of which had exposed bone. With the infection, the surgery failed and will be repeated after her wounds are healed. The challenge to us was her presentation to our office to heal her wounds quickly. DESCRIPTION OF PAST MANAGEMENT: Tissue biopsy on the wounds on her foot in March of 2002 showed a moderate growth of numerous bacteria. She was treated with antibiotics and conventional wound care at the surgeon’s office until August when she was referred to us. CURRENT CLINICAL APPROACH: We wanted a treatment that would contain the drainage, protect from maceration, keep the wounds moist, and provide an antimicrobial barrier. After other treatment modalities were used, i.e., hydrocolloids, gels, packing materials, etc., a powder containing ionic silver* was tried. This was easy for her to do herself, and contains alginate to aid in fluid handling, mixes with wound exudate, and turns into a gel that is easily removed during wound irrigation. Ideal for deep, tunneling and/or highly exudating wounds, and is shown to be effective against a broad range of bacteria. PATIENT OUTCOMES: On 8/14, we started using the powder. The patient changed her own dressing due to a non-compliant mother. This was a very easy dressing for the patient to use. She kept using it until closure occurred on 11/21/02. CONCLUSION: Healing time 3 months from bone to close. Even though the antimicrobial barrier effect of an open bottle is not guaranteed after 7 days of use, this young lady used it until closure. This proves to us that there must be some effectiveness after the 7-day period as she has only used two 10-gram bottles of this product from start to healing, on very difficult deep wounds. REFERENCES: Medline Industries, Inc., Website www.medline.com. Podiatry Channel on http://www.podiatrychannel.com/charcot

*Arglaes Powder® from Medline Industries, Inc.
Background

A genetic neurological disorder, Charcot-Marie-Tooth Disease was first described in the late 1800's. Over 115,000 Americans are affected with this peripheral nerve damaging disease, which causes muscle weakness and wasting in the extremities, specifically the feet, lower legs, hands and forearms. At this time there is no known cure, however, the treatment includes managing the symptoms.

The initial presentation is foot drop, as the weakness affects the body. The person often presents with frequent lower extremity (LE) fractures, sprained ankle(s) and eventually develop contractures; such as a shortened foot with a high arch, called pes cavus. If left untreated, the contractures and resultant deformities cause difficulty walking, bracing requirements, special walking aids, and physical therapy. Sensory perception will be altered. Decreased sensitivity to pain, touch and temperature are common. Many patients will require surgery to correct or at least treat the deformities.

Case History

This otherwise healthy, 15 year old female presents with Charcot-Marie-Tooth disease and underwent surgical correction of a cavus foot deformity to help with ambulation in November 2001. Post operatively she developed osteomyelitis with an open wound that cultured positive for corynebacterium species (moderate growth), staph sciuri (few) acinetobacter antitatus/ haemolyticus (few) and enterococcus casseliflavus. Treated with systemic antibiotics and routine local care as an outpatient under the direction of her surgeon. In August 2002, she presented to the emergency department with two open area on her left foot, an acute infection, which included osteomyelitis. She was then referred to WOC Services for further assessment and management of her wounds. Her psychosocial assessment was relevant and included the need for self care. Her single mother with four other younger siblings was unavailable for wound management.
Current Clinical Approach

Because of the drainage and maceration that was on the edge of the wound, we wanted a treatment that would contain the drainage, protect from maceration, and keep the wound moist. We also needed it to provide an antimicrobial barrier so that she would not have to change it frequently. After trying other treatment modalities, (including hydrocolloids, gels, packing materials), we started using powder containing ionic silver.

This dressing was selected because silver ion technology has been shown to be an effective treatment to reduce the bioburden in a non-healing, recalcitrant wounds. Silver ion dressings have been shown to play a role in wound bed preparation by preventing wounds that are contaminated/colonized from progressing to a cellulitis or even worse, systemic infection. Silver is a broad spectrum antimicrobial that has no known resistance and is effective against all known medically relevant organisms without causing tissue damage. There are no reported allergies to silver in its ionic form. Historically, the delivery method associated with silver products (i.e. sulfa) has served as an allergen. Silver powder does not contain sulfa. Silver ions are active in very low concentrations of 1-2 ppm or less, the term “oligodynamic” has been conferred to silver due to its antimicrobial affect at low concentrations.

This treatment was easy for her to do herself and also served the purposes we were looking for. Powder containing ionic silver also contains alginate to aid in fluid handling. As the powder mixes with wound exudate, it turns into a gel that adheres to the wound bed and is easily removed during wound irrigation. Ideal for deep, tunneling and/or highly exudating wounds, powder containing ionic silver has been shown to be effective against a broad range of fungi, gram positive and gram negative bacteria including S. aureus, Ps. Aeruginosa, E. coli, C. albicans, Asp. niger, MRSA and VRE.

Conclusion

In this case, many factors needed to be taken into account. This was a young healthy patient with a progressive disease process that is probably going to require frequent, aggressive intervention. The social implications as well as the quality of life and cost issues will be of ongoing concern. As her disease (Charcot - Marie - Tooth) progresses, she may need more surgical intervention on an already compromised area with a history of osteomyelitis. Protecting this patient from developing a potential non-healing, chronic wound is of paramount concern. It is also important that she be protected from developing drug resistance and require further interventions that could be avoided. By appropriate assessment, aggressive treatment and use of topical silver as a broad spectrum antimicrobial, the wound was protected from another systemic wound infection and the wound closed.

References

Medline Industries, Inc., Website www.medline.com

Podiatry Channel on http://www.podiatrychannel.com/charcot

Muscular Dystrophy Association publications on Charcot-Marie-Tooth Disease.
