

Review article

Prevention of Infection in Diabetic Foot Ulcer

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Abstract

The term “diabetic foot ulcer” is not precise. It characterizes the availability of a skin breakage on the feet of people who have diabetes, which doesn't cure quickly, but it displays nothing of its type. Infected ulcers are occasionally unrelated to significant local and particular signs and symptoms in diabetics. Infection is an often complication of diabetic foot ulcer, with up to fifty eight percent of ulcers being infected at primary presentation at a diabetic foot clinic, escalating to eight two percent in patients hospitalized for a DFU. These DFUs are consociated with poor clinical consequences for the patient and more costs for both the patient and the health care system. Patients with a DFI have a fifty times increased pitfall of hospitalization and one hundred fifty times escalated pitfall of lower extremity amputation analogized with patients with diabetes and no foot infection. Management of osteomyelitis and correct debridement are mandatory. Topical metronidazole gel (0.75%-0.80%) is often used directly on the wound once per day for 5 to 7 days or frequently as necessitated, and metronidazole tablets can be crushed and placed onto the ulcer bed.

Keywords: Diabetic foot ulcer; Infection; Prevention

Abbreviations

DFIs: Diabetic Foot Infections

DFUs: Diabetic Foot Ulcers

DMs: Diabetic Mellitus

Introduction

The term “diabetic foot ulcer” is not precise. It characterizes the availability of a skin breakage on the feet of people who have diabetes, which doesn't cure quickly, but it displays nothing of its type. There are several factors that influence to the breakage of the skin,

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and once the ulcer has advanced, many factors hinder its quick curing. The antecedent of skin break will different from people to people, and the antecedent of the holding pattern in curing will not solely different among person but also different with time; vary factors perhaps predominant in detaining curing at distinctive stages in the healing procedure [1-5]. On an average every thirty s an extremity is amputated owing to complications of DM and the preponderance of these amputations are secondary to foot ulcers [5,6]. Management of infection in diabetic ulcer is sophisticated and costly. Patients often necessitate receiving long term drugs or become hospitalized for a prolonged period of time. It is estimated that often fifteen to twenty five percent of diabetic patients advance DFU among their life time [5,7]. Infections that do not present an abrupt harm of limb loss are delineated as ‘non limb-threatening’, and are specifically described by the absence of signs of systemic intoxication. In a superficial lesion cellulitis of greater than two centimeter is specifically not available, nor is deep abscesses, osteomyelitis or gangrene. Infections delineated as ‘limb-threatening’ revealed prolonged cellulitis, deep abscesses, osteomyelitis or gangrene. Ischemia reveals a superficial lesion as limb-threatening. Infected ulcers are occasionally unrelated to significant local and particular signs and symptoms in diabetics. Infection is an often complication of DFU, with up to fifty eight percent of ulcers being infected at primary presentation at a diabetic foot clinic, escalating to eight two percent in patients hospitalized for a DFU. These DFIs are consociated with poor clinical consequences for the patient and more costs for both the patient and the health care system. Patients with a DFI have a fifty times escalated pitfall of hospitalization and one hundred fifty times escalated pitfall of lower extremity amputation analogized with patients with diabetes and no foot infection. As infection of a diabetic foot wound advocates a meager consequence, early diagnosis and management are indispensable. Un-suitably, systemic signs of inflammation such as fever and leukocytosis are frequently absent even with a severe foot infection. As local signs and symptoms of infection are also frequently decreased; because of concurrent peripheral neuropathy and ischemia, diagnosing, and delineating resolution of infection can be sophisticate [8,9]. Acute infection (phlegmon, abscess, necrotizing fasciitis) is an emergent situation that can detrimental not solely the limb but also the patient's life. It necessitates evaluation, and instantaneous hospitalization and management. The infection perhaps owing to progressive reduction of soft tissues, involvement of bone, requires for surgical treatment, and likely amputation [10,11].

Control of infection

Microbiological assessment is made to handpick important antibiotic management before ulcerectomy. It is significant to settle entire involvement of bone (such as a metatarsal head) so as to plan the best type of surgery for the wound. Correct antimicrobial therapy should be done for infective ulcers. Management of osteomyelitis and correct debridement are mandatory. A number of small trials have evaluated the important efficacy of granulocyte colony-stimulating factor in diabetics with foot infections. However adjunctive G-cerebrospinal fluid didn't seem to accelerate the clinical resolution of infection or ulceration, it minimized the rate of surgical procedures involving

amputation [12-16]. Topical metronidazole gel (0.75%-0.80%) is often used directly on the wound once per day for 5 to 7 days or frequently as necessitated, and metronidazole tablets can be crushed and placed onto the ulcer bed. There are many distinctive articles (case studies or anecdotal experience) narrating the decrement of wound odor with topically applied metronidazole. Antibiotics such as neomycin, gentamycin, and mupirocin have excellent antibacterial coverage when used topically. Silver containing dressings come in variety formulations and have extreme antibacterial coverage. Silver dressings and polyherbal preparations have revealed excellent sequences in curing diabetic foot wounds. They are highly effective in burn wounds and can also be used in infected or colonized wounds. Sisonmycin (0.10%) and acetic acid at concentrations between zero points five percent and five percent are effective defend *Pseudomonas*, distinctive gram-negative bacilli, and beta hemolytic streptococci wound infections. Povidone iodine solution dressings are highly effective in curing sutured wounds and hypergranulating wounds to inhibit or hamper more granulation [17-22]. PO and parenteral antibiotics are prescribed for mild soft tissue infections and moderate to severe infections, respectively. Evidence-based regimes should be pursued for the treatment of infection in diabetic foot. Correct dosage, optimal duration, identification and takeoff of the infective focus and recognition of side effects should be hypercritically evaluated in entire outpatients and inpatients with DFIs. Every hospital should advance an institutional antibiotic policy containing guidelines and protocols for antibiotic use. It is advisable to have distinctive parts for management and prophylaxis involving surgical process as well as how to manage distinctive infections. 3 degrees of antibiotic prescribing are specifically recommended.

1. 1st line of choice - antibiotics prescribed by entire physicians.
2. Restrained antibiotic class - for resistant pathogens, polymicrobial infections, special conditions, and costly antibiotics. When prescribing antibiotics from this class, the prescriber should discuss with the committee and head of the department.
3. Reserve antibiotics-for life-threatening infections, to be used after acquiring permission from the committee [23-26].

Conclusion

The term “diabetic foot ulcer” is characterized as the availability of a skin breakage on the feet of people who have diabetes, which doesn't cure quickly, but it displays nothing of its type. Infected ulcers are occasionally unrelated to significant local and particular signs and symptoms in diabetics. Infection is an often complication of DFU, with up to fifty eight percent of ulcers being infected at primary presentation at a diabetic foot clinic, escalating to eight two percent in patients hospitalized for a DFU. Topical metronidazole gel (0.75%-0.80%) is often used directly on the wound once per day for 5 to 7 days or frequently as necessitated, and metronidazole tablets can be crushed and placed onto the ulcer bed. Povidone iodine solution dressings are highly effective in curing sutured wounds and hypergranulating wounds to inhibit or hamper more granulation.

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Availability of Data and Materials

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Competing Interests

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References

1. Monteiro-Soares M, Boyko EJ, Jeffcoate W, Joseph M, Russell D, et al. (2020) Diabetic foot ulcer classifications: A critical review. *Diabetes Metab Res Rev* 36: e3272.
2. Prompers L, Schaper N, Apelqvist J, Edmonds M, Mauricio D, et al. (2008) Prediction of outcome in individuals with diabetic foot ulcers: Focus on the differences between individuals with and without peripheral arterial disease. *The Eurodiale study. Diabetologia* 51: 747-755.
3. Yotsu RR, Pham NM, Oe M, Nagase T, Sanada H. et al. (2014) Comparison of characteristics and healing course of diabetic foot ulcers by etiological classification: Neuropathic, ischemic and neuro-ischemic type. *J Diabetes Complications* 28: 528-535.
4. Game F (2016) Classification of diabetic foot ulcers. *Diabetes Metab Res Rev* 32: 186-194.
5. Karthikesalingam A, Holt PJE, Moxey P, Jones KG, Thompson MM (2010) A systematic review of scoring systems for diabetic foot ulcers. *Diabet Med* 27: 544-549.
6. Iraj B, Khorvash F, Ebnesahidi A, Askari G (2013) Prevention of diabetic foot ulcer. *Int J Prev Med* 4: 373-376.
7. Boulton AJ, Vileikyte L, RagnarsonTennvall G, Apelqvist J (2005) The global burden of diabetic foot disease. *Lancet* 366: 1719-1724.
8. Paola LD, Faglia E (2006) Treatment of Diabetic Foot Ulcer: An Overview Strategies for Clinical Approach. *Current Diabetes Reviews* 2: 431-437.
9. Lipsky BA (2001) Infectious problems of the foot in diabetic patients. In: Bowker JH, Pfeifer MA (eds.). Levin and O' Neal's, (1st edn). *The Diabetic Foot*, 6th edition Mosby, USA.
10. Frykberg RG, Armstrong DG, Giurini J (2000) American College of Foot and Ankle Surgeons. *Diabetic foot disorders: A clinical practice guideline. J Foot Ankle* 39: 31-33.
11. Epstein DA, Corson JD (2001) Surgical perspective in treatment of diabetic foot ulcers. *Wounds* 13: 59-65.
12. Larijani B, Hasani-Ranjbar S (2008) Overview of diabetic foot; novel treatments in diabetic foot ulcer. *Daru* 16: 1-6.
13. De Lalla F, Pellizzer G, Strazzabosco Martini Z, Jardin DG, et al. (2001) Randomized prospective controlled trial of recombinant granulocyte colony-stimulating factor as adjunctive therapy for limb-threatening diabetic foot infection. *Antimicrob Agents Chemother* 45: 1094-1098.
14. Yonem A, Cakir B, Guler S, Azal O, Corakci A (2001) Effects of granulocyte-colony stimulating factor in the treatment of diabetic foot infection. *Diabetes Obes Metab* 3:332-337.

15. Kastenbauer T, Hornlein B, Sokol G, Irsigler K (2003) Evaluation of granulocyte-colony stimulating factor (Filgrastim) in infected diabetic foot ulcers. *Diabetologia* 46: 27-30.
16. Cruciani M, Lipsky BA, Mengoli C, de Lalla F (2005) Are granulocyte colony-stimulating factors beneficial in treating diabetic foot infections: A meta-analysis. *Diabetes Care* 28: 454-460.
17. Kavitha KV, Tiwari S, Purandare VB, Khedkar S, Bhosale SS, et al. (2014) Choice of wound care in diabetic foot ulcer: A practical approach. *World J Diabetes* 5: 546-556.
18. McDonald A, Lesage P (2006) Palliative management of pressure ulcers and malignant wounds in patients with advanced illness. *J Palliat Med* 9: 285-295.
19. <http://en.wikipedia.org/wiki/Gel>
20. Kalinski C, Schnepf M, Laboy D, Hernandez LM (2005) Effectiveness of a topical formulation containing metronidazole for wound odor and exudates control. *Wounds* 17: 84-90.
21. Newman V, Allwood M, Oakes RA (1989) The use of metronidazole gel to control the smell of malodorous lesions. *Palliat Med* 3: 303-305
22. Barton P, Parslow N (2001) Malignant wounds: Holistic assessment & management. In: Krasner DL, Rodeheaver GT, Sibbald RG (eds.). *HMP Communications*, Wayne, Pennsylvania. Pg no: 699-710.
23. Matsuura GT, Neil Barg (2013) Update on the antimicrobial management of foot infections in patients with diabetes. *Clinical Diabetes* 31: 59-65.
24. Chahine EB, Harris S, Williams R (2013) Diabetic foot infections: an update on treatment. *US Pharm* 38: 23-26.
25. Cookson B (2000) The harmony project's antibiotic policy and prescribing process tools. *APUA Newsletter* 18: 4-6.
26. Dolan NC, Liu K, Criqui MH, Greenland P, Guralnik JM, et al. (2002) Peripheral artery disease, diabetes, and reduced lower extremity functioning. *Diabetes Care* 25: 113-120.



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