

# Understanding the Risk Factors for Developing Diabetic Foot Osteomyelitis

Arati Khanna Gupta\*

Department of Medicine, Women's Hospital in Boston, Boston, USA

## DESCRIPTION

Diabetic foot osteomyelitis is a severe complication of diabetes mellitus that can lead to amputation if not detected and treated promptly. Osteomyelitis is an infection that affects the bones, and it commonly occurs in the foot in individuals with diabetes. According to the Centers for Disease Control and Prevention (CDC), approximately 15% of people with diabetes will develop a foot ulcer, and up to 24% of those with a foot ulcer will develop osteomyelitis [1,2].

Diabetic foot osteomyelitis is a bone infection that occurs due to the breakdown of the skin and the presence of a wound in the foot. The bacteria enter the wound and penetrate the skin, infecting the underlying bone. The symptoms of osteomyelitis can be subtle at first, with pain, swelling, and redness around the wound being the most common symptoms. However, as the infection progresses, it can lead to fever, chills, and severe pain. If left untreated, osteomyelitis can cause permanent damage to the bone, and in severe cases, amputation may be necessary [3,4].

## Risk factors for developing diabetic foot osteomyelitis

Several risk factors increase the likelihood of developing diabetic foot osteomyelitis. These factors can be divided into modifiable and non-modifiable [5,6].

### Non-modifiable risk factors

**Diabetes duration:** The longer a person has diabetes, the greater the risk of developing diabetic foot osteomyelitis. Individuals who have had diabetes for more than ten years are at an increased risk.

**Neuropathy:** Peripheral neuropathy is a common complication of diabetes that affects the nerves in the extremities. It can cause loss of sensation in the feet, making it difficult for individuals to detect foot injuries or wounds, which can lead to the development of osteomyelitis [7].

**Vascular disease:** Individuals with diabetes are at an increased

risk of developing peripheral arterial disease, which causes a decrease in blood flow to the extremities. Poor circulation can slow the healing process, making it more likely for a wound to become infected and lead to osteomyelitis [8].

### Modifiable risk factors

**Foot deformities:** Individuals with diabetes may develop foot deformities, such as hammertoes, which can lead to pressure points on the foot. Pressure points can cause skin breakdown, leading to wounds and infections.

**Poor foot care:** Poor foot care, such as not keeping the feet clean and dry, not wearing properly fitting shoes, or not checking the feet regularly for wounds or injuries, can increase the risk of developing diabetic foot osteomyelitis.

**Smoking:** Smoking has been linked to an increased risk of developing peripheral vascular disease and neuropathy, both of which are risk factors for diabetic foot osteomyelitis [9].

**Hyperglycemia:** High blood glucose levels can impair the immune system, making it more difficult for the body to fight off infections [10].

## Preventing diabetic foot osteomyelitis

Preventing diabetic foot osteomyelitis involves managing the risk factors associated with its development [11]. The following measures can be taken to reduce the risk of developing diabetic foot osteomyelitis:

- **Maintain good blood sugar control:** Maintaining good blood sugar control can help prevent diabetic foot osteomyelitis by keeping the immune system functioning properly.
- **Inspect feet regularly:** People with diabetes should inspect their feet daily for cuts, blisters, or other injuries. Any injuries should be promptly treated to prevent infection.
- **Wear proper footwear:** Proper footwear is essential for people with diabetes. Shoes should fit well and have adequate support to prevent foot injuries.
- **Practice good foot hygiene:** Good foot hygiene can help.

**Correspondence to:** Arati Khanna Gupta, Department of Medicine, Women's Hospital in Boston, Boston, USA, E-mail: dr.aratikhanna@gmail.com

**Received:** 04-Jan-2023; **Manuscript No.** BMRJ-23-22498; **Editor assigned:** 06-Jan-2023; **PreQC.** No. BMRJ-23-22498 (PQ); **Reviewed:** 20-Jan-2023; **QC.** No. BMRJ-23-22498; **Revised:** 27-Jan-2023; **Manuscript No.** BMRJ-23-22498 (R); **Published:** 03-Feb-2023, DOI: 10.35248/2572-4916.23.11.210.

**Citation:** Gupta AK (2023) Understanding the Risk Factors for Developing Diabetic Foot Osteomyelitis. J Bone Res. 11:210.

**Copyright:** © 2023 Gupta AK. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## CONCLUSION

A typical side effect of a diabetic foot infection or ulcer is osteomyelitis. The diagnosis requires a high degree of clinical suspicion. A combination of conventional radiographs, bone scans, and MRIs are useful radiological tests. Bone samples should be sent for histology, sensitivity, and culture research. Excision of the affected bone is essential in the surgical management of persistent osteomyelitis in diabetic feet. Reoperation could result from insufficient removal. Long-term treatment of osteomyelitis with systemic antibiotics can prevent the need for amputation. Based on the results of the bone cultures, it would be possible to consider systemic antibiotics in the right patient population. However, surgery can offer sufficient debridement and permit the use of cement spacers or beads that are antibiotic-loaded. To obtain the best results with the treatment provided, patients with diabetic foot osteomyelitis should receive adequate counselling regarding their options and medical optimization.

## REFERENCES

- Lavery LA, Peters EJ, Armstrong DG, Wendel CS, Murdoch DP, Lipsky BA. Risk factors for developing osteomyelitis in patients with diabetic foot wounds. *Diabetes Res Clin Pract.* 2009;83(3):347-352.
- Sharma H, Sharma S, Krishnan A, Yuan D, Vangaveti VN, Malabu UH, et al. The efficacy of inflammatory markers in diagnosing infected diabetic foot ulcers and diabetic foot osteomyelitis: Systematic review and meta-analysis. *PloS One.* 2022;17(4):e0267412.
- Berendt AR, Peters EJ, Bakker K, Embil JM, Eneroth M, Hinchliffe RJ, et al. Diabetic foot osteomyelitis: A progress report on diagnosis and a systematic review of treatment. *Diabetes Metab Res Rev.* 2008;24(S1):145-161.
- Hartemann-Heurtier A, Senneville E. Diabetic foot osteomyelitis. *Diabetes Metab.* 2008;34(2):87-95.
- Aragón-Sánchez J, Lipsky BA, Lázaro-Martínez JL. Gram-negative diabetic foot osteomyelitis: risk factors and clinical presentation. *Int J Low Extrem Wounds.* 2013;12(1):63-68.
- Dubský M, Jirkovska A, Bem R, Fejfarova V, Skibova J, Schaper NC, et al. Risk factors for recurrence of diabetic foot ulcers: Prospective follow-up analysis in the Eurodiale subgroup. *Int Wound J.* 2013;10(5):555-561.
- Martín Noguero T, Luna Alcalá A, Beltrán LS, Gómez Cabrera M, Broncano Cabrero J, Vilanova JC. Advanced MR imaging techniques for differentiation of neuropathic arthropathy and osteomyelitis in the diabetic foot. *Radiographics.* 2017;37(4):1161-1180.
- Hill SL, Holtzman GI, Buse R. The effects of peripheral vascular disease with osteomyelitis in the diabetic foot. *Am J Surg.* 1999;177(4):282-286.
- Guo Q, Ying G, Jing O, Zhang Y, Liu Y, Deng M, et al. Influencing factors for the recurrence of diabetic foot ulcers: A meta-analysis. *Int Wound J.* 2022.
- Uckay I, Jornayvaz FR, Lebowitz D, Gastaldi G, Gariani K, Lipsky BA. An overview on diabetic foot infections, including issues related to associated pain, hyperglycemia and limb ischemia. *Curr Pharm Des.* 2018;24(12):1243-1254.
- Alavi A, Sibbald RG, Mayer D, Goodman L, Botros M, Armstrong DG, et al. Diabetic foot ulcers: Part I. Pathophysiology and prevention. *J Am Acad Dermatol.* 2014;70(1):1.