

It's not only Diabetes! Charcot Foot as a Complication of Chemotherapy

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Abstract

Introduction: Charcot foot occurs in patients with peripheral neuropathy resulting from diverse conditions including diabetes mellitus, leprosy, syphilis, poliomyelitis, chronic alcoholism or syringomyelia. Chemotherapy can result in a condition affecting extremities including the feet called chemical induced peripheral neuropathy (CIPN) but it is not known to cause Charcot foot.

Case presentation: A 70-year-old male who developed peripheral neuropathy following chemotherapy treatment for follicular lymphoma which was presumably due to Vincristine. This patient was referred to our foot and ankle clinic with a swollen, painful and warm right foot which after clinical examination and imaging was deemed to be a Charcot foot.

Conclusion: We would like here to use this case to raise the awareness of the possibility of Charcot foot as a possible complication of peripheral neuropathy secondary to chemotherapy.

Keywords

Chemotherapy; charcot foot, neuropathy

Introduction

Charcot foot is a complex syndrome, in which the occurrence of inflammation in the active phase is followed by variable degrees of destruction of the skeletal architecture Charcot foot occurs in patients with peripheral neuropathy resulting from diverse conditions including diabetes mellitus, leprosy, syphilis, poliomyelitis, chronic alcoholism or syringomyelia. Chemotherapy can result in a condition affecting extremities including the feet called chemical induced peripheral neuropathy (CIPN) but it is not known to cause Charcot foot.

Case Report

The patient, a 70-year-old gentleman developed follicular lymphoma at age of 60 and three years later had a disease transformation which required six cycles of R-CHOP (Rituximab, Cyclophosphamide, Hydroxydaunomycin, Vincristine and Prednisolone) to complete remission. Unfortunately, this gentleman developed Anthracycline cardiomyopathy and peripheral neuropathy presumably due to Vincristine. Five years later this patient presented to the foot and ankle clinic via GP referral with 10 weeks' history of swelling in the dorsal aspect of his foot which came on without an obvious injury or provocation. He was otherwise well. On examination, he was afebrile. He had a bony tenderness around

the base of the 1st and 2nd metatarsals. The overlying skin had no signs to suggest infection. Blood tests revealed a raised ESR 28mm/hour, CRP 6mg/l and normal white cell count. Serial radiographs of the foot showed bony erosion of the base of the 2nd metatarsal (figure-1). On this basis, the diagnosis of Charcot foot was made and management was commenced immediately. First, the patient's right foot was placed in a total contact cast for five weeks to support the foot and allow the soft tissue to settle. This was then changed to a Neofract walker boot (figure-2) which he will continue to wear till full recovery. The patient is still under follow-up and making good progress.

Discussion

Charcot foot is a complex syndrome, in which the occurrence of inflammation in the active phase is followed by variable degrees of destruction of the skeletal architecture [1]. Charcot foot occurs in patients with peripheral neuropathy resulting from diverse conditions including diabetes mellitus, leprosy, syphilis, poliomyelitis, chronic alcoholism or syringomyelia. Repetitive micro-trauma that exceeds the rate of healing may cause fractures and dislocations. Changes in circulation may cause resorption of bone, weakening the bone and increasing susceptibility to fracture and dislocation [2].

Diagnosis is based on a high index of suspicion for this problem in patients with neuropathy. Increased redness, swelling and warmth may be the only early signs. Some patients have pain. Early radiographs may show soft tissue swelling with no bony changes, but repeat radiographs several weeks later may show bone and joint changes.

Its diagnosis is usually missed at first presentation and the resulting delay can lead to worsening structural damage, secondary ulceration, osteomyelitis and potentially avoidable limb loss [3]. Presently, diabetes is recognized as the most common cause of denervation-induced arthropathy worldwide [4], although leprosy is a more common cause of the Charcot foot in endemic areas [5].

Chemotherapy can result in a chemical induced peripheral neuropathy (CIPN). This is a progressive and often irreversible condition featuring pain, numbness, tingling and sensitivity to cold in the hands and feet (sometimes progressing to the arms and legs) that afflicts between 30% and 40% of patients undergoing chemotherapy [6].

We searched Embase, Medline, CAB Abstracts, CINAHL, PubMed central, Cochrane Library, and Web of Knowledge for reports of Charcot foot as a complication of chemotherapy and found that there is only one case reported by Mc Kay *et al* [7]. The authors reported a case of 70-years-old male who developed Charcot arthropathy secondary to Vincristine therapy used to treat anaplastic Oligodendroglioma. This is a case of interest because the incidence and prevalence of CIPN is significantly high and we believe that there will be a considerable number of patients who develop Charcot foot as a complication of chemotherapy. The emphasis of this paper is firstly to advocate for an introduction of regular foot checks as part of the package of care for those receiving chemotherapy. Secondly, we would like for patients to be educated on the symptoms of Charcot foot so they have a low threshold for seeking medical help.

Figures



Figure 1: Initial radiograph of patient's right foot shows bony erosion of the base of the 2nd metatarsal



Figure 2: shows Neofract walking boot

Conclusion

The diagnosis of Charcot foot is challenging especially in those patients who develop it secondary to causes other than diabetes. Delayed presentation can lead to worsening structural damage, secondary ulceration, osteomyelitis and potentially avoidable limb loss. We would like here to emphasise the importance of the regular and closer follow-up of cancer patients after chemotherapy treatment. Once suspected, urgent referral to foot and ankle speciality should be made.

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