

Neutrophilic Eccrine Hidradenitis in a Patient of Acute Myeloid Leukemia on Chemotherapy with Cytarabine

Abstract

Neutrophilic eccrine hidradenitis (NEH) is a dermatosis affecting the eccrine glands in particular characterized by acute, self-limited, inflammatory papules and plaques and has been commonly described in patients with cancer – particularly acute myeloid leukemia (AML) – who are on chemotherapy. We present the case of a febrile neutropenic patient receiving chemotherapy for AML and presented with well-defined erythematous macules and papule suggestive of NEH. This report emphasizes the necessity of a prompt diagnosis in order to prevent the use of multiple antibiotics and inadvertent use of other drugs as it is a self-limiting condition.

Keywords: *Acute myeloid leukemia, chemotherapy, eccrine glands, neutrophilic eccrine hidradenitis*

**Priyanka S. Ghuge,
Rusina S. Karia,
Ram H. Malkani**

*Jaslok Hospital and Research
Centre, Mumbai, Maharashtra,
India*

Introduction

Neutrophilic eccrine hidradenitis (NEH), a condition initially described in the 80s, is associated with an underlying malignancy or those on chemotherapy – the most common being acute myeloid leukemia (AML) on chemotherapy.^[1-4] Although many chemotherapy agents have been associated with NEH, the most frequently described cases are those where patients were receiving cytarabine-containing induction chemotherapy for AML. More recently, it has also been associated with carbamazepine.^[5] Many of these cases are associated with a state of peripheral neutropenia. We present a case of NEH in patient of AML on chemotherapy.

Case Report

A 45-year-old male patient presented with multiple, reddish, small, slightly painful eruptions involving the upper and lower limbs and lower back for the past 4 days. The eruption began on the lower limbs and progressed to involve the other areas in a span of 2 days. The lesions were asymptomatic, except for slight pain on pressure. The patient was diagnosed with AML 1 year ago. He had received two cycles of chemotherapy. The patient was treated with injections cytarabine and daunorubicin. The patient was admitted

currently for AML blast crisis and had received the third dose of chemotherapy with both these medications 15 days ago. The patient also reported of similar skin lesions in the past two chemotherapy cycles. However, these lesions were mild and resolved completely at the end of 3 weeks. The patient reported residual dark spots after resolution of these lesions.

On cutaneous examination, there was evidence of multiple well-defined erythematous macules and papules, some coalescing to form plaques, measuring 0.5 cm to 2 cm in size. These were present on the extensor aspect of the lower limbs. In addition, there were ill-defined nodules, of 1 cm × 1 cm in size over the dorsal aspect of fingers and lower back [Figure 1a]. We also found that deep dermal tenderness was mildly positive in these lesions. The patient was febrile and had peripheral neutropenia. Based on the history and clinical presentation, a differential diagnosis of drug eruption, Sweet's syndrome, vasculitis, and NEH was considered.

The histopathological examination revealed a spongiotic epidermis with mild hyperkeratosis. There was dense periappendageal neutrophilic infiltrate present in the dermis, particularly involving the eccrine coils. The examination also showed dermal edema [Figure 2a and b]. There was no evidence of vasculitis. Thus,

Address for correspondence:
Dr. Ram H. Malkani,
Jaslok Hospital, Room No. 200,
Dr. G. Deshmukh Marg,
Mumbai - 400 026, Maharashtra,
India.
E-mail: malkanipub@gmail.com

Access this article online

Website: www.cci-j-online.org

DOI: 10.4103/ccij.cci_j_59_17

Quick Response Code:



How to cite this article: Ghuge PS, Karia RS, Malkani RH. Neutrophilic eccrine hidradenitis in a patient of acute myeloid leukemia on chemotherapy with cytarabine. *Clin Cancer Investig J* 2017;6:261-3.

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Figure 1: Presence of erythematous, ill-defined nodules, of 1 cm × 1 cm in size over the dorsal aspect of fingers

in view of the above clinical and histological findings, a diagnosis of NEH was confirmed.

We treated the patient with oral prednisolone 0.5 mg/kg/day for 7 days. There was partial resolution of the lesions after which he was lost to follow-up.

Discussion

NEH, a dermatosis affecting the eccrine glands in particular, has been known to occur most commonly in patients undergoing chemotherapy for malignancies. It is a rare condition but characterized by acute, self-limited, inflammatory neutrophilic dermatosis and has been most commonly described in association with patients of AML receiving chemotherapy.^[6]

NEH was first described by Harrist *et al.* in 1982^[4] and Flynn *et al.* in 1984.^[3] NEH is associated with an underlying malignancy in 90% of cases,^[7] most common being AML on chemotherapy. Other malignancies associated with NEH are hematologic malignancies such as chronic lymphocytic leukemia, Hodgkin's and non-Hodgkin's lymphoma, and solid tumors such as osteogenic sarcoma, testicular carcinoma, metastatic breast cancer, and Wilms tumor.^[2] The most frequently described cases are those where patients were receiving cytarabine-containing induction chemotherapy for AML. Some other drugs such as bleomycin, mitoxantrone, anthracyclines, decitabine, zidovudine,^[8] and acetaminophen, which have also been described as being associated with NEH.

There are some case reports of infectious causes for NEH. Infectious agents such as human immunodeficiency virus,^[9] Gram-positive cocci, *Streptococcus* spp., *Serratia marcescens*, *Nocardia* spp., *Enterobacter cloacae*, and *Staphylococcus aureus* have been reported in patients who presented classical histological features of NEH.

NEH usually presents 2 days to 3 weeks following the initiation of chemotherapy although a period of as long as 2 years following therapy is also known.^[9] It can either be

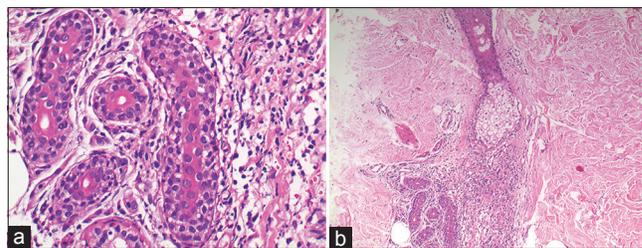


Figure 2: Histopathological examination revealed a spongiotic epidermis with mild hyperkeratosis. There was dense peri-appendageal neutrophilic infiltrate present in the dermis, particularly involving the eccrine coils with Dermal edema

both localized (limb or trunk) or generalized. It generally presents as erythematous papules and plaques with a variable morphology; they may be multiple or solitary, painful, or asymptomatic.

These patients are usually febrile and neutropenic at the time of presentation.^[10] The diagnosis is histological; the biopsy usually shows dense neutrophilic infiltrate in the eccrine unit, dermal edema, and necrosis of the eccrine coils and glands. The mechanism by which the eccrine sweat unit is affected remains unknown. One hypothesis underlines direct cytotoxic effect of the drugs. Toxic by-products are secreted through sweat, and thus, by neutrophilic chemotaxis induced by cellular damage, neutrophilic infiltration of the eccrine coils and glands occurs. Consequently, the toxic concentration of the drugs within the eccrine gland may lead to necrosis of the epithelial cell.^[11] Even so, no studies that evaluated the drug concentration in sweat glands were found.

Another hypothesis describes NEH as a part of the neutrophilic dermatoses spectrum^[12] and as a paraneoplastic condition. As mentioned, NEH has also been described in a healthy population.^[13] Therefore, a possibility of underlying sweat gland abnormalities has also been suggested.

NEH is a self-limiting condition. The treatment is symptomatic and mainly consists topical or systemic corticosteroids for a short duration.^[11] However, corticosteroids should be used with caution patients with peripheral neutropenia. Pain can be managed with analgesic medication if tender lesions are present. One case report encourages the use of dapsone in a dose of 100 mg/day to prevent recurrences. It was suggested that dapsone inhibits neutrophil chemotaxis and should be started 48 h before initiating the treatment.^[14]

Conclusion

We have reported here a febrile neutropenic patient undergoing chemotherapy for acute myeloid leukemia who presented with classic NEH. We emphasize the necessity of a prompt diagnosis to prevent the use of multiple antibiotics and inadvertent use of other drugs. In our case, cytarabine was the drug likely responsible for NEH.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Beutner KR, Packman CH, Markowitch W. Neutrophilic eccrine hidradenitis associated with Hodgkin's disease and chemotherapy. A case report. *Arch Dermatol* 1986;122:809-11.
2. Fitzpatrick JE, Bennion SD, Reed OM, Wilson T, Reddy VV, Golitz L, *et al.* Neutrophilic eccrine hidradenitis associated with induction chemotherapy. *J Cutan Pathol* 1987;14:272-8.
3. Flynn TC, Harrist TJ, Murphy GF, Loss RW, Moschella SL. Neutrophilic eccrine hidradenitis: A distinctive rash associated with cytarabine therapy and acute leukemia. *J Am Acad Dermatol* 1984;11:584-90.
4. Harrist TJ, Fine JD, Berman RS, Murphy GF, Mihm MC Jr. Neutrophilic eccrine hidradenitis. A distinctive type of neutrophilic dermatosis associated with myelogenous leukemia and chemotherapy. *Arch Dermatol* 1982;118:263-6.
5. Bhanu P, Santosh KV, Gondi S, Manjunath KG, Rajendaran SC, Raj N, *et al.* Neutrophilic eccrine hidradenitis: A new culprit-carbamazepine. *Indian J Pharmacol* 2013;45:91-2.
6. Mills L, Steinmetz-Rodriguez C, Folkes A, Shecter R. Neutrophilic eccrine hidradenitis: An unusual case and a review of the literature. *J Am Osteopath Coll Dermatol* 2017;38:34-6.
7. Bailey DL, Barron D, Lucky AW. Neutrophilic eccrine hidradenitis: A case report and review of the literature. *Pediatr Dermatol* 1989;6:33-8.
8. Bachmeyer C, Aractingi S. Neutrophilic eccrine hidradenitis. *Clin Dermatol* 2000;18:319-30.
9. Bachmeyer C, Reygagne P, Aractingi S. Recurrent neutrophilic eccrine hidradenitis in an HIV-1-infected patient. *Dermatology* 2000;200:328-30.
10. Wong GC, Lee LH, Chong YY. A case report of neutrophilic eccrine hidradenitis in a patient receiving chemotherapy for acute myeloid leukaemia. *Ann Acad Med Singapore* 1998;27:860-3.
11. Thorisdottir K, Tomecki KJ, Bergfeld WF, Andresen SW. Neutrophilic eccrine hidradenitis. *J Am Acad Dermatol* 1993;28:775-7.
12. Wallach D. Neutrophilic dermatoses. *Rev Med Interne* 2005;26:41-53.
13. Belot V, Perrinaud A, Corven C, de Muret A, Lorette G, Machet L, *et al.* Adult idiopathic neutrophilic eccrine hidradenitis treated with colchicine. *Presse Med* 2006;35:1475-8.
14. Shear NH, Knowles SR, Shapiro L, Poldre P. Dapsone in prevention of recurrent neutrophilic eccrine hidradenitis. *J Am Acad Dermatol* 1996;35:819-22.