

Demodex spp. Infestation in a breast-cancer patient: A case report

Serdar Olt, Gültür Gültür Yalçın¹, Özlem Sönmez Uysal², Engin Karakeçe¹, İhsan Hakkı Çiftci¹

Departments of Internal Medicine, ¹Oncology, ²Microbiology, Sakarya University Medical Faculty, Sakarya, Turkey

ABSTRACT

Demodex folliculorum and *Demodex brevis* are obligatory parasites that live in sebaceous glands and follicles. When immune system becomes suppressed by any reason, patients become vulnerable to obligatory parasites like *D. folliculorum* and *D. brevis*. Immune system becomes suppressed in cancer patients who undergo chemotherapy, and as a result these patients become vulnerable to infestations. In our case, a 45 year-old female has been admitted to oncology clinic for a medical treatment of breast cancer. Her systematic physical examination was normal, except redness on her cheeks and forehead. There was no abnormality in biochemical and haematological laboratory values. We have decided to apply chemotherapy of Adriamycin, cyclophosphamide and 5-fluorouracil. Due to the itchy redness on her cheeks and forehead, we had performed an examination for demodex before chemotherapy; and we have identified 20 mites/cm² on her right and left cheeks, and 15 mites/cm² on her forehead. When our patient had came our clinic with increasing complaint of itchy rash, after the first course of chemotherapy we have reexamined demodex. The result of microscopic examination revealed large amount of demodex of 50 mites/cm² on her right and left cheeks and 30 mites/cm² on her forehead, which were nearly 2.5-times higher than the previous examination. This increase probably was associated with immune suppression of chemotherapy.

Key words: Chemotherapy, demodex, infestation

Address for correspondence:

Dr. Serdar Olt,
Department of Internal Medicine,
Sakarya University Medical Faculty
Sakarya, Turkey.
E-mail: Serdarolt84@yahoo.com

INTRODUCTION

Demodex parasites are in demodicidae family, and *Demodex folliculorum* and *Demodex brevis* are members of this family. Demodex mites can proliferate on all skin areas, but they prefer facial area. They are mostly asymptomatic commensals, and increasing number of parasites associated with the higher risk of being pathological.¹ *D. folliculorum* and *brevis* are obligatory parasites that settle in sebaceous glands and follicles. These mites are transmitted with direct contact and are probably contained in powders. Although there is no sufficient evidence, number of authors claim that there is an association between demodex and certain skin disorders, including rosacea, steroid induced dermatitis, primary irritation dermatitis, seborrheic dermatitis, folliculitis and chronic blepharitis.²

The case of suppressed immune system creates a favorable environment for the proliferation of the parasite.³ Immune system is become suppressed in cancer patients, who undergo chemotherapy, consequently they become open to infections.⁴ In our case, we aimed to emphasize the increase of symptoms of demodex infestation, after chemotherapy treatment in breast cancer patient.

CASE REPORT

A 45 year-old female has been admitted to oncology clinic for a medical treatment of breast cancer. Utilizing the National Comprehensive Cancer Network guidelines (NCCN), patient's stage was T2N1M0 and we have decided to apply adjuvant chemotherapy of Adriamycin, cyclophosphamide and 5-fluorouracil. Her systemic physical examination was normal except redness on her cheeks and forehead. The patient skin type was oily and her face-washing habit was use of hand soap twice a day. There was no abnormality in biochemical and haematological laboratory values. Due to the itchy redness on her cheeks and forehead, we had performed an examination for demodex before chemotherapy; and we have identified 20 mites/cm² on her right and left cheeks, and 15 mites/cm² on her forehead. *D. folliculorum* was sought in the lesion sites using the non-invasive method, known as standardised skin surface

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Figure 1: Diffuse erythema, without papules and pustule, appeared on face of a patient after the chemotherapy

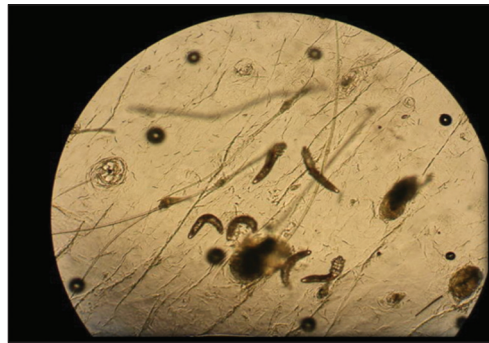


Figure 2: Microscopic appearance of demodex

biopsy (SSSB). When our patient came to our clinic with increasing complaint of itchy rash after the first course of chemotherapy, we have reexamined demodex. The result of microscopic examination revealed large amount of demodex of 50 mites/cm² on her right and left cheeks and 30 mites/cm² on her forehead, which were significantly higher than the first detection results [Figures 1 and 2]. This increase probably was associated with immune suppression caused by chemotherapy.

DISCUSSION

There are some studies showing some of the skin diseases that are associated with demodex infestation. Skin diseases that are associated with demodex infestation include rosacea, steroid-induced dermatitis, primary irritation dermatitis, seborrheic dermatitis, folliculitis and chronic blepharitis.⁵ Although usually asymptomatic, demodex may sometimes be a causative for non-specific symptoms such as facial itching with or without erythema, seborrheic dermatitis — like or perioral dermatitis — like lesions, papulopustular lesions and an acneiform lesions.⁶ Demodex related-skin disorders are still controversial. Demodex infestation differs among the skin types, and prefers oily, mixed or dry skin, rather than neutral skin. Immune suppression make patient susceptible to the opportunistic diseases like parasitic infestation, including demodex mites. Chemotherapy is the term used for treatment of cancer using drugs that affect the cancer cells. Chemotherapy drugs vary depending on the type of cancer. Regardless of the type of drugs, all chemotherapy drugs cause immune suppression. Cancer itself is a process that suppresses the immune system. Infections are the most common causes of morbidity and mortality in cancer patients. The causes of infections in cancer patients are increasing day by day because of impaired host defense in cancer patient. The most important cause of infections in cancer patients is the immune suppression. Even though cancer can lead to the

serious infections, it may also lead to non-fatal conditions such as demodex infestation. The increased incidence of demodex species implies that immunosuppression may have a major role. Because of immunosuppression, old age, topical and systemic corticosteroid usage, haematological malignancies, AIDS, topical pimecrolimus and tacrolimus usage, and diabetes mellitus are predisposing factors for the incidence of demodex species.⁷ Here, we wanted to emphasize that in the differential diagnosis, patients presenting a facial redness after chemotherapy should be a sufficient condition to consider the demodex infestation, increased due to weakness in the immune system.

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