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Vandetanib-induced photoallergic dermatitis: A case report

Vandetanib'e bağlı gelişen fotoallerjik dermatit: Bir olgu sunumu

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Abstract

Vandetanib is a multi-kinase inhibitor of epidermal growth factor receptor (EGFR), vascular endothelial growth factor (VEGFR). Most common dermatological side effects induced by vandetanib include papulopustular eruption, hand-foot syndrome, and hyperpigmentation.

In this report, we present a case with metastatic medullar thyroid carcinoma who developed vandetanib-induced photoallergic dermatitis.

Keywords: Dermatitis, photoallergic, vandetanib

Öz

Vandetanib, epidermal büyüme faktörü reseptörü ve vasküler endotelyal büyüme faktörünü inhibe eden bir multi-kinaz inhibitörüdür. Vandetanib kaynaklı en sık görülen dermatolojik yan etkiler papülopüstüler erüpsiyon, el - ayak sendromu ve hiperpigmentasyondur.

Burada, vandetanib ile ilişkili fotoalerjik dermatit gelişen metastatik medüller tiroid karsinomlu bir hastayı sunduk.

Anahtar sözcükler: Dermatit, fotoallerjik, vandetanib

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Introduction

Vandetanib is a multi-kinase inhibitor of epidermal growth factor receptor (EGFR), vascular endothelial growth factor (VEGFR) [1, 2]. Vandetanib has been approved by the Food and Drug Administration for the treatment of advanced or metastatic thyroid medullar carcinoma. In the literature, there are few cases of photoonycholysis, lichenoid photodermatitis and photoallergic dermatitis due to vandetanib treatment [1-3].

In this paper, we aim to report vandetanib-induced photoallergic dermatitis due its rarity.

Case report

A 49-year-old male patient presented to our clinic with erythematous and squamous lesions distributed in the face, the "V" area of the neck, and both forearms. The patient had been diagnosed with thyroid medullar carcinoma 8 years earlier and a metastasis was detected 1 year earlier. Since the patient showed no response to chemotherapy, the patient had been started on vandetanib therapy (300 mg/day) (Caprelsa, AstraZeneca, Turkey). At the second week of the vandetanib therapy, multiple itchy erythematous and squamous lesions occurred in the face, "V" area of the neck, and the sun-exposed areas of the forearms (Figures 1 and 2). Laboratory tests including complete blood count and liver function tests were normal. No biopsy samples were taken since the patient refused biopsy. The patient was diagnosed as having vandetanib-induced photoallergic dermatitis since the lesions only occurred in the sun-exposed areas and the patient had received no drugs other than vandetanib that could cause photoallergic dermatitis. The lesions resolved significantly after the termination of the vandetanib therapy followed by the administration of systemic methyl prednisolone and continuous protection from sunlight.

Written consent was taken from the patient.

Figure 1: Itchy erythematous and squamous lesions at "V" area of the neck covering the face.

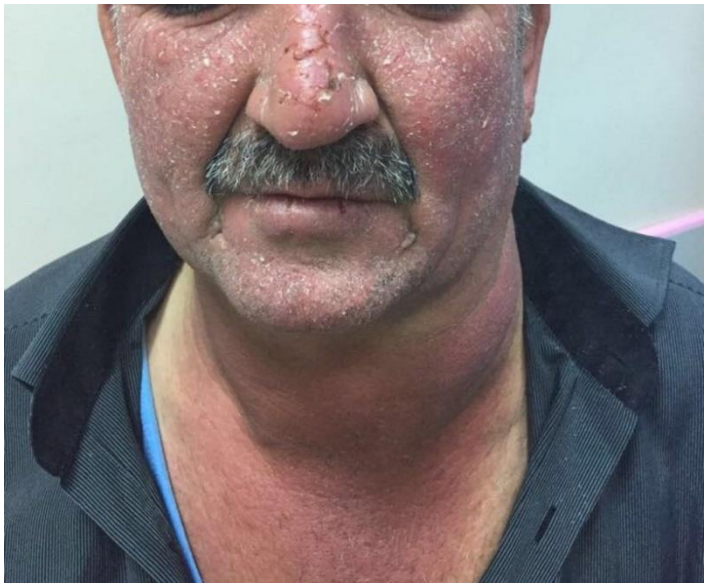
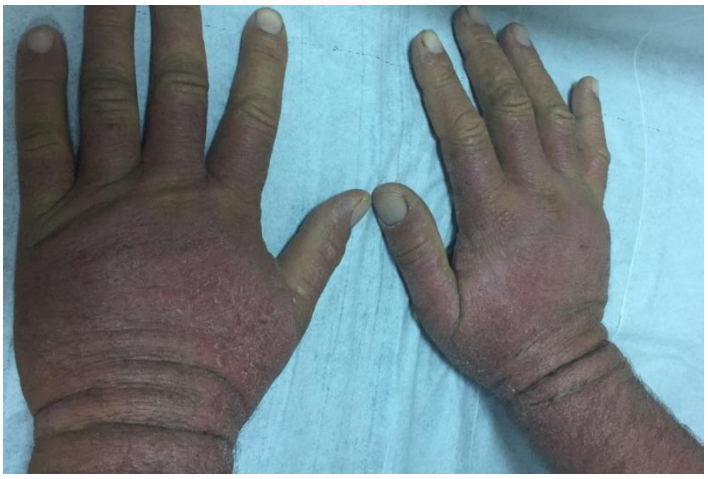


Figure 2: Itchy erythematous and squamous lesions at the sun-exposed areas of the forearms.



Discussion

The epidermal growth factor receptor tyrosine kinase (EGFR-TK) inhibitors cause less side effects compared to standard chemotherapeutics [4]. As the EGFRs are intensely expressed in the epidermis, the hair follicles and the sebaceous glands, these inhibitors mostly lead to dermatological side effects in 50%-100% of the cases [5]. Most common dermatological side effects induced by vandetanib include papulopustular eruption, hand-foot syndrome, hyperpigmentation, mucosal changes, dry skin, hair changes, paronychia, and pyogenic granuloma [1, 2, 5].

Photosensitivity caused by vandetanib is rarely reported. A previous study reported that vandetanib resulted in dermatologic side effects in 37% of the patients, causing sunburn-like erythema in the sun-exposed areas in most of the patients [3]. On the other hand, it has also been reported that vandetanib may lead to a sense of burning, edema, and bulla formation within several days or weeks after the initiation of the therapy [1].

Chemicals causing photosensitivity have a low molecular weight, which often have a plain, tricyclic or polycyclic structure and include a heteroatom. Moreover, these chemicals absorb UV radiation, which is a photosensitizer [2]. Vandetanib also has a low molecular weight [1, 2].

UV radiation and EGFR inhibition increase the oxidative stress in the keratinocytes, causing inflammatory burn on the skin which may lead to skin rash [4]. Photosensitive reactions may be phototoxic or photoallergic and are formed by the compounds that are activated with the radiation harming cell membrane and DNA. The immune response developed against these activated compounds is responsible for photoallergic reactions. In most patients, phototoxic reactions develop within a few days in the presence of adequate sunlight and as a result of drug administration. Moreover, these photoallergic reactions may develop several days or even weeks after the development of the immune response. During the vandetanib therapy, phototoxic reactions occur more frequently than photoallergic reactions [2]. Literature reviews indicate that there have been very few cases of vandetanib-induced photoallergic dermatitis in the literature [2, 6].

In our patient, the fact that the lesions occurred 2 weeks after the initiation of the vandetanib therapy and the lesions were itchy and only occurred in the sun-exposed areas made us consider photoallergic dermatitis rather than a phototoxic reaction. Moreover, our patient had received no drugs or herbals other than vandetanib that could cause photoallergic dermatitis.

Definitive diagnosis of photoallergic dermatitis includes irritant contact dermatitis and allergic contact dermatitis [7, 8]. In our patient, photoallergic dermatitis was diagnosed since the lesions occurred in the sun-exposed areas.

Literature also indicates that there is no certain evidence suggesting that restarting vandetanib treatment is safe in severely photosensitive patients [2]. These reactions mostly recover through protection from sunlight and by avoiding sunscreens [2, 4]. In our patient, the lesions resolved significantly after the termination of the vandetanib therapy followed by the administration of systemic methyl prednisolone and continuous protection from sunlight.

In conclusion, photosensitive reactions and photoallergic dermatitis may be induced by vandetanib and similar drugs. Therefore, in the presence of dermatological side effects caused by these drugs, the drug therapy can be gradually diminished or even discontinued. During the vandetanib therapy, clinicians should warn the patients to protect themselves from sunlight.

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