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Case Report

Epidermal growth factor receptor inhibitors related trichomegaly of Eyelashes

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Advances in understanding of the mechanisms involved in oncogenesis have led to the development of targeted therapies such as epidermal growth factor receptor inhibitors (EGFRIs), targeting a variety of molecular structures and able to inhibit aberrantly activated oncogenic pathways. Their use made treatment more tolerable with significant reduction of systemic adverse effects. However, EGFRIs are associated with toxicities affecting the skin and adnexal structures that affect the majority of treated patients. Trichomegaly of eyelashes is a unique side-effect, seen in prolonged treatment with EGFRI. It is essential to be familiar with this adverse effect, its potential complications, long-term sequelae, and available effective treatment strategy in order to appropriately manage these patients.

INTRODUCTION

Epidermal growth factor receptor inhibitors are associated with toxicities affecting the skin and adnexal structures which affect the majority of treated patients. Trichomegaly connotes thick, curly, rigid eyelashes. The several reported cases of mild eyelash lengthening with cetuximab and erlotinib therapy are believed to be attributable to epidermal growth factor receptor inhibition in the hair follicles, leading to premature maturation (terminal differentiation) [1–3]. We report a recently encountered unique side-effect of Erlotinib, an epidermal growth factor receptor (EGFR) tyrosine kinase inhibitor that may be of interest to the fellow physicians.

CASE REPORT

A 61-year-old Indian woman was referred to our cancer centre with adenocarcinoma of right lung with stage IV due to bone metastasis. Patient initially received four cycles of palliative carboplatin and Pemetrexed combination chemotherapy. After four cycles, patient discontinued platinum-based doublet chemotherapy for generic Erlotinib due to poor chemotherapy tolerance, financial constraints, and EGFR mutation positivity for deletion E746-A750 of codon 19. Approximately after 18 weeks of erlotinib therapy, she developed significant lengthening, rigid and curly overgrowth of her eyelashes which is called trichomegaly of eyelashes. (Figure 1) Patient continued on Erlotinib therapy for 13 months in view of good clinical response of tumour despite trichomegaly of eyelashes requiring frequent trimming.

DISCUSSION

The last decade in oncology has been highlighted by the emergence of novel, highly specific anti-cancer agents, targeting a variety of molecular structures and able to inhibit aberrantly activated oncogenic pathways [4]. Therapies targeting the EGFR have shown their efficacy in the treatment of several types of cancer [5]. Patients who are treated with EGFR inhibitors will develop various dermatological side-effects, most frequently being an acneiform eruption along with xerosis, eczema, fissures, telangiectasia, hyperpigmentation, hair changes and paronychia with pyogenic granuloma [6]. These skin effects appear to be mechanism-based linked to the inhibition of EGFR action but the exact patho-

Figure 1: Anteroposterior and lateral view of eyelash overgrowth.

physiology remains elusive [4, 6]. EGFR is expressed in the keratinocytes of the outer sheath of the hair follicle and functions as an on/off switch both at the beginning and at the end of the anagen phase. Erlotinib-induced inhibition of hair follicle activity may arrest the anagen to catagen transformation, leading to an aberrant anagen phase and subsequently to abnormal hair growth. The close temporal relationship of the onset of hypertrichosis with the administration of erlotinib, the concomitant presentation of other typical features of EGFR inhibition, and the recession of hypertrichosis after erlotinib discontinuation strongly supports the contributory role of erlotinib in inducing the specific hair changes [7, 8]. During prolonged treatment with EGFR inhibitors, very characteristic hair changes are the lengthening, curling, and rigidity of eyelashes which are called as trichomegaly of eyelashes [9, 10]. Trichomegaly of eyelashes may obscure vision and has been reported to cause eyelid irritation, including plugging of the meibomian glands and infection. No additional symptoms or clinical signs were not seen in our case when compared with previous case reports [7, 8]. In most cases, eyelash trimming may be sufficient treatment option, although systemic antibiotics and artificial tears may sometimes be necessary for local irritation or meibomitis [9, 10]. Left untreated these dermatological side-effects could represent a threat to patient compliance. Oncologists should be cognizant of these potential sequelae, for which referral to an ophthalmologist or dermatologist may sometimes be helpful.

Written informed consent was obtained from the patient's family for publishing this case report and accompanying images.

AUTHORS' CONTRIBUTIONS

All authors have revised the manuscript critically and gave final approval of the version to be published.

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