INTRODUCTION

Oral inhibitors of epidermal growth factor receptor (EGFR), such as erlotinib and gefitinib, are used in the treatment of solid tumors, including non-small cell lung cancer. EGFR may be overexpressed in some neoplasms and plays also a role in skin cells proliferation. Their cutaneous toxicity is well-known with a wide range of manifestations, that may occur in 15% of the patients, the most common are acneiform eruptions, but xerosis, paronychia, and involvement of hair and nails are described.

At the ultrastructural level, erlotinib-induced hair changes are acquired pili torti et canaliculi; these alterations in the hair shaft may modify the hair type from straight to curly hair.

There are no reports of scanning electron microscopy of hair manifestations under gefitinib therapy.

CASE REPORT

We examined a 78-year-old female patient, with lung carcinoma, taking gefitinib for 15 months. The treatment has no side effects with good tolerance and tumor response. Although the patient had not observed any change on the hairs under the therapy, some scalp hairs were obtained to be examined in natura with scanning electron microscopy.

Under low magnification incipient grooving was observed on the hair surface, tortions or angulations of the hair shaft were not found. With higher magnifications the surface grooving was even more evident. Our findings show that gefitinib may cause subclinical hair changes, similar to those described at the ultrastructural level with erlotinib.
Under low magnification, incipient grooving was observed on the hair surface of all examined specimens [Figure 1], tortions or angulations of the hair shaft were not found. With higher magnifications, the surface grooving was even more evident [Figure 2] with irregular distribution of the hair cuticula.

**DISCUSSION**

Hair changes are already described with gefitinib, which may be thinner and curly.[5] Our findings show that gefitinib may cause subclinical hair changes, similar to those described at the ultrastructural level with erlotinib,[4] in the reported case of erlotinib tortions and angulations were found, which could contribute to the clinical manifestation, modifying the hair type.[4]

These kind of treatment with oral inhibitors (erlotinib and gefitinib) and monoclonal antibodies (cetuximab), targeting the EGFR, may cause xerosis and acneiform eruptions in up to 80% of the patients.[6] Acneiform lesions occur normally in the 2nd week of treatment and respond to classical acne treatment, such as topical and oral antibiotics,[7] another common side effect seen in one third of the patients is periungual pyogenic granulomas.[7] Rare purpuric manifestations are also described, with a later onset, 3.5 months after therapy initiation.[8]

Scalp hair and eyelashes manifestations are observed in 10%–20% of the patients.[3] The scalp hair may become rough on palpation and curly.[4,5] Eyelashes may lose their normal curvature and became longer, the association of eyelashes’ trichomegaly with poliosis was also reported.[9]

Second- and third-generation oral EGFR inhibitors (afatinib, dacomitinib, and osimertinib) and new monoclonal antibodies (panitumumab and zalutumumab) are emerging therapies,[10] that may be also associated with skin changes, dermatologists should be also aware of the possibility of hair shaft modifications under this kind of therapy.

**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.

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**Conflicts of interest**

There are no conflicts of interest.

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