CASE REPORT

A case of psoriasis pustolosa palmaris induced by cetuximab

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SUMMARY

Cetuximab is a monoclonal antibody that competitively inhibits the epidermal growth factor receptor (EGFR). It is used for the treatment of metastatic colorectal cancer after first-line therapy. We report the first case of a pustular psoriasiform drug eruption induced by cetuximab in a patient with colorectal cancer. This paradoxical side effect could be the result of an imbalance in downstream molecular pathways due to the EGFR signal blockade that could, in selected patients, induce alternative signalling pathways related to keratinocyte proliferation.

BACKGROUND

Cetuximab is a monoclonal antibody that competitively inhibits the epidermal growth factor receptor (EGFR). It is used for the treatment of some epithelial tumours that overexpress EGFR, notably colon-rectal cancer and head and neck squamous cell carcinoma.¹ The EGFR system regulates multiple cellular functions involved in cancerogenesis, such as proliferation, migration and differentiation; furthermore, it plays a critical role in the development and function of normal skin and may have a role in the pathogenesis of psoriasis.

Psoriasis is a chronic, immune-mediated, inflammatory skin condition, frequently observed in clinical practice. Psoriatic patients have upregulated expression levels of various markers including angiogenic peptides, growth factors, receptors and cytokines, thus mediating certain signalling cascades involved in hyperproliferation and abnormal differentiation of keratinocytes.²

CASE PRESENTATION

A 68-year-old man with metastatic colorectal cancer was treated with cetuximab monotherapy delivered weekly. After 8 weeks of continuous treatment, he was referred to the unit of dermatology because he developed an eruption on the hypothenar eminence of his right hand. Physical examination showed multiple deep-seated pustules and dusky-red macules arising in an oval sharply demarcated reddish patch covered by fine scales, clinically compatible with a pustular psoriasiform drug eruption (figure 1). We examined the entire skin surface of the patient, including the palm of the left hand and the soles, without finding other psoriatic lesions. He had neither a personal nor family history of psoriasis, nor had he been exposed to any of the known exacerbating factors of the disease at the time of the event.

TREATMENT

The patient was treated with clobetasol propionate 0.05% ointment once a day for 20 days, achieving a complete resolution of the lesions.

OUTCOME AND FOLLOW-UP

The treatment with cetuximab was continued and at 6-month follow-up there was no recurrence of the pustular psoriasis.

DISCUSSION

EGFR is normally expressed at high levels in immature keratinocytes of the basal layer of the epidermis and hair follicles, and its expression decreases with keratinocyte differentiation. Many studies indicate that, unlike in normal skin, the expression and activity of EGFR are overexpressed in the upper layer of the actively involved psoriatic epidermis because of retention or persistence of the receptors into the parakeratotic stratum corneum.^{3 4} Moreover, one of its ligands, transforming growth factor α (TGF- α), is overexpressed in psoriatic epidermis compared with normal keratinocytes, indicating that keratinocyte EGFR-mediated hyperstimulation could be involved in the development of psoriatic skin

Figure 1 Pustular palmar eruption on the right hand of the patient.

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lesions.⁵ In addition, antipsoriatic vitamin D3 derivatives are able to inhibit the expression of EGFR in human epidermal keratinocytes.⁶ Moreover, some authors reported marked improvement of psoriasis during cetuximab monotherapy for the treatment of colon cancer and eruptive skin squamous cell carcinomas.^{7–10} Therefore, it is plausible that cetuximab may induce remission of psoriasis in these patients through regulation of abnormal EGFR expression.

Surprisingly, the described therapeutic effect of anti-EGFR therapy in psoriasis was not in line with the induction of a psoriasiform eruption observed in our patient. To the best of our knowledge, there is only one previous report of a psoriasiform eruption induced by cetuximab.¹¹ In that case, psoriatic lesions developed 12 days after the first infusion in a patient who received cetuximab in monotherapy for a laryngeal squamous cell carcinoma. A case of exacerbation of psoriasis has also been reported in a patient treated with an EGFR tyrosine kinase inhibitor;¹² however, in that case, other factors, such as the cessation of cytostatic agents, could not be excluded as causative agents for the disease relapse.

In conclusion, few reports concerning the effect of cetuximab on psoriasis have been described up to now: four of them demonstrated an improvement of the skin lesions during cetuxi-

mab therapy whereas only one case was induced by this treatment. The causal mechanism for the paradoxical effect observed in our case remains unclear; it could be the result of an imbalance in downstream molecular pathways due to the EGFR signal blockade that could, in selected patients, induce alternative signalling pathways related to keratinocyte proliferation. Further observations in this setting may provide additional information on the true incidence of these adverse reactions and their mechanism of action.

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Competing interests None declared.

Patient consent Obtained.

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Learning points

- Many studies suggest that the epidermal growth factor receptor (EGFR) system may have a role in the pathogenesis of psoriasis.
- Cases of both marked improvement of psoriasis and induction of the psoriatic disease during cetuximab monotherapy have been described.
- The paradoxical effect observed in our case could be the result of an imbalance in downstream molecular pathways due to the EGFR signal blockade.

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