

Case report

A 49-year-old female presented with an acneiform eruption induced by erlotinib. She had been diagnosed with Stage IV (T1N3M1) epidermal growth factor receptor (EGFR) mutant adenocarcinoma of the lung and commenced on erlotinib 150mg daily. Within three days she developed an acneiform eruption prompting empiric treatment with topical hydrocortisone and systemic doxycycline 100mg daily. The acneiform eruption progressed with evolution to widespread pustules and papules with proud erythema involving the entire face with minor extension to the scalp, décolletage and back (Fig 1). Treatment was escalated to a daily benzoyl peroxide wash and transition to topical methylprednisolone aceponate and minocycline 100mg daily, met with modest response. Given the significant burden on her quality of life, it was decided to continue erlotinib but trial adjuvant chromophore gel-assisted phototherapy (CGAP). The patient received 12 treatment sessions over 6 weeks involving application of a 2mm layer of the photoconverter chromophore gel followed by irradiation with a multi-LED lamp (Fig 2). Within three weeks, the acneiform eruption was arrested and topical treatment was withdrawn one week after. The patient completed a further three weeks of CGAP as per standard protocol and maintained on minocycline 50mg daily thereafter. The severity of her acneiform eruption decreased from an Investigator's Global Assessment (IGA) of 5 to 0. Scoring of the patient reported outcomes of the Acne Quality of Life Index decreased from 78 to 23 and increased on the Acne-specific Quality of Life Questionnaire from 49 to 109 demonstrating marked improvement in quality of life. She continues treatment with erlotinib maintaining tumour arrest without any active cutaneous toxicity; only post-inflammatory scarring (Fig 3).



Figure 2. Patient receiving CGAP treatment



Figure 1. Acneiform eruption induced by erlotinib as treatment of EGFR mutant adenocarcinoma of the lung



Figure 3. Resolution of acneiform eruption with chromophore gel-activated phototherapy leaving residual hyperpigmented and atrophic scarring

Discussion

There is emerging evidence for the effectiveness of CGAP in acne. The precise mechanism of action is yet to be elucidated but one hypothesis is that this photodynamic reaction excites endogenous porphyrins which generate reactive oxygen species leading to reduction in the size of sebaceous glands. CGAP is non-invasive, in-office intervention with no known systemic side effects. The case suggests that there may be promise in CGAP as management of acneiform eruptions induced by EGFR inhibitors. However, as a single case report the placebo effect cannot be diminished, nor the possibility of a delayed response to tetracycline therapy or spontaneous remission. Furthermore, in terms of outcome measures, the IGA is a subjective score which was evaluated by a single non-blinded assessor, and the patient reported outcome measures have been validated in acne but not acneiform eruptions. CGAP may be a therapeutic avenue for acneiform toxicities in oncology and may warrant further investigation with more scientifically robust methodology.