Sir, Botulinum toxin is a very popular medical treatment used worldwide for wrinkle reduction. It inhibits the release of acetylcholine at the neuromuscular junction and is now being used for various off-label conditions like rosacea and facial flushing with encouraging results. Topical steroid abuse is quite rampant especially for its skin lightening properties which often leads to side effects like skin atrophy, acneiform eruptions, persistent erythema, rosacea like dermatitis, hypertrichosis etc. The patient often presents with a red face which can be a cause of embarrassment and social withdrawal. We describe a case of topical corticosteroid induced rosacea like dermatitis (TCIRD) who responded well to botulinum toxin (BTX) treatment with complete clearance of her red face.

A 39-year-old female patient presented to us with complaints of facial skin eruptions, redness and burning sensation associated with itching and irritation on exposure to sunlight. History revealed application of over-the-counter steroid creams for brown patches on her face since many months. Cessation of the cream led to worsening, hence the patient continued intermittent usage to alleviate the symptoms. On examination, she had papular eruptions and erythematous to brown macules over the forehead and cheeks. There was diffuse erythema present over the forehead, cheeks and perioral region. Few telangiectasia were also seen. Brown patches were present over the cheeks, nose and chin. A diagnosis of melasma with TCIRD was made. Therapy with oral doxycycline, oral antihistamines, topical pimecrolimus, bland moisturizer and a physical sunscreen was initiated. After six weeks, she reported an improvement with resolution of the papular eruptions. She still had a persisting red face, melasma and post inflammatory hyperpigmentation [Figure 1a].

The patient also requested for a BTX treatment. After counseling, a conventional BTX treatment was done for her wrinkles and a micro BTX treatment with intradermal injections was done all over the face for rejuvenation. At the two week follow up after the BTX session, the patient reported with marked reduction in facial erythema and an improvement in the red face [Figure 1b]. Topical kojic acid and oral antioxidants were then added to her regimen, with topical pimecrolimus being tapered to a thrice weekly application. The patient again reported after six months with complete clearance of erythema and an improvement in melasma. The above coincidental findings [Figure 2a and 2b], make us believe that BTX may have a potential role in the treatment of rosacea like conditions like TCIRD. It may hasten the resolution of persistent erythema in such patients [Figure 3a and 3b] which may otherwise need many months of therapy, resulting in better patient satisfaction and compliance.

The mechanism by which BTX acts in rosacea and facial flushing still needs more elucidation. BTX blocks the release of acetylcholine from the peripheral autonomic nerves of the cutaneous vasculature thereby modulating the vasodilatory responses. It also inhibits mast cell degranulation, release of neuropeptides, substance P and calcitonin gene related peptide. This suppresses the influx of inflammatory mediators and gives the skin time to heal. [1-3] The improvement is usually prolonged without any rebound phenomenon. Doses ranging from 15-50

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units have been used with dilutions ranging from 1:3 to 1:4, injected intradermally with effects being visible as early as two weeks.[2-4] Other skin conditions associated with facial erythema where intradermal BTX injections may emerge as an innovative therapeutic modality include seborrheic dermatitis and acne, due to the sebum reducing properties of BTX.[5]

In the above case, a 50-unit lyophilized vial of OnabotulinumtoxinA was reconstituted with 1.25 ml of normal saline. This was used for conventional BTX for the forehead lines, glabellar complex and crow’s feet. The remaining 12 units of the reconstituted BTX was further diluted with normal saline in a ratio of 1:3 (approximately 0.30 units per 0.025 ml) for the micro BTX. Tiny blebs of 0.025-0.05 ml were raised with an insulin syringe (6 mm, 31 gauge) with intradermal placement of the toxin, about 1 cm apart over cheeks, temples, perioral region and nasolabial lines.

TCIRD results due to prolonged usage of topical corticosteroids, leading to vasoconstriction of cutaneous vessels with an accumulation of metabolites like nitric oxide. On withdrawal, the cutaneous vessels dilate to a diameter bigger than their initial size thereby exacerbating erythema and burning sensation resulting in a typical ‘red face’. Patients can present with papules, pustules, erythema, telangiectasia and edema. Management can be challenging as patients have sensitive skin and are intolerant to many topical medications. Treatment includes cessation or tapering of the steroid cream, oral anti-inflammatory antibiotics, topical metronidazole, topical calcineurin inhibitors, bland moisturizers and sun protection.[6-8]

Our patient responded to the medical management of TCIRD but was worried about the persistent erythema and pigmentation. Though the BTX treatment was done for a cosmetic indication, it led to near complete resolution of the erythema at the two week follow up and complete clearance without a recurrence after six months [Figure 4a and 4b]. We hereby report this finding as it may aid in treatment of the ‘red face’ seen in patients of TCIRD. Unlike rosacea, once resolved recurrence may be uncommon here unless the patient starts misusing the topical corticosteroids again. The optimal dosage, dilution and efficacy of Micro BTX in the management of TCIRD will need more research and organized studies.

**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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