# Tacrolimus as a therapeutic alternative in psoriasis: A retrospective observational study

Sir,

Psoriasis vulgaris is a chronic inflammatory condition affecting 1–3% of the general population. The commonly used systemic agents for psoriasis are methotrexate, cyclosporine, acitretin, phototherapy and biologics. Cyclosporine is a well-studied and rapidly acting drug in psoriasis.[1] Tacrolimus has a similar mechanism of action to cyclosporine on pathogenic T cells. However, it is 100 times more potent inhibitor of T-cell activation and has fewer adverse effects in renal transplantation patients as compared to cyclosporine.[2] Its use in psoriasis is not studied extensively. We conducted a retrospective analysis of seven patients in the department of dermatology at a tertiary care centre in West Maharashtra, who were administered oral tacrolimus during the period June 2019 through December 2019. Patients with moderate-to-severe chronic plaque psoriasis [psoriasis area and severity index (PASI) score >10] who failed first-line therapy (less than 50% improvement in baseline PASI after at least three months of treatment) or presented in erythroderma or pustular psoriasis were administered tacrolimus. The patients with renal/hepatic disease, uncontrolled hypertension, acute/chronic infection, immunodeficiency states, seizure disorders, diabetes, malignancy and pregnant/lactating women were excluded from the study. Capsule tacrolimus was administered in a dose of 0.1 mg/kg/day and all the study patients were followed up at one, four and 12 weeks. PASI, body surface area and any adverse effects of the medication were noted. Investigations performed are tabulated in Table 1. Alternative treatments were offered to patients who did not tolerate or had a suboptimal response after four weeks of therapy.

A total of seven patients including four males and three females were administered the drug during the study period. The median age of the patients and duration of psoriasis were 60 years (interquartile range: 54–64 years) and nine years (interquartile range: 1–22), respectively. The median PASI at baseline was 39 (interquartile range: 13–48). At 12 weeks, six (85.7%) patients achieved PASI 75 and five (71%) patients achieved PASI 90 response [Figure 1], one (14.3%) showed PASI 75 response and one did not reach PASI 50 and was considered a failure. The patient who failed treatment was managed with secukinumab. Details of baseline characteristics and response at various timelines are presented in Table 2. The most common side effects experienced were diarrhoea and vomiting in three (43%) and impaired glucose tolerance in one (14.3%) patient, which normalised in a week. Serum tacrolimus trough levels at day six were within normal limits for all the patients.

Tacrolimus is used less commonly for dermatological indications as compared to cyclosporine because of factors such as cost and less experience of dermatologists with this drug, while nephrologists have largely shifted to tacrolimus for post-renal transplant patients due to better efficacy and safety. Nikolaidis *et al*. used 0.3 mg/kg of oral tacrolimus for four weeks in severe psoriasis; all the patients achieved remission but developed raised serum creatinine.[3] This may be because of the higher dosage used as compared to our study. Jegasothy *et al*. used oral tacrolimus in seven patients with psoriasis including four post-transplant patients in a dose of 0.016 mg/kg for three weeks. All the patients achieved remission.[4] A study by European FK506 multicentre psoriasis study group in which 70% or more reduction in PASI was seen in 12/19 (63.2%) patients at nine weeks with dose ranging from 0.05 to 0.15 mg/kg/day.[5] We used 0.1 mg/kg in our patients and PASI 75 was seen in 6/7 (85.7%) patients. The better response may be due

**Table 1: Investigations performed in patients**

| Timeline | Investigations |
|---|---|
| Baseline | Blood pressure, blood urea, serum creatinine, lipid profile, blood sugar fasting and post prandial, complete blood count, serology for hepatitis B, C and HIV, chest X-ray and tuberculin skin test, serum bilirubin, SGOT, SGPT, urine routine and microscopic examination |
| One week | Blood pressure, serum tacrolimus trough level |
| Two weeks | Blood pressure, serum creatinine |
| Four weeks | Blood pressure, blood urea, serum creatinine, blood sugar fasting and postprandial, lipid profile |
| Eight weeks | Blood pressure, serum creatinine |
| 12 weeks | Blood pressure, blood urea, serum creatinine, blood sugar fasting and postprandial, lipid profile, serum bilirubin, SGOT, SGPT |

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**Table 2: Baseline disease, previous treatment, response to treatment and adverse effect profile in patients treated with tacrolimus**

| S. No. | Age | Sex | Duration | Disease | Previous treatment | ADR | Serum tacrolimus level (normal levels: 5-15 ng/ml) | PASI | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Baseline | Four weeks | 12 weeks |
| 1 | 60 | F | 1 | Erythroderma | MTX, CsA | Diarrhoea | 5.62 | 39 | 0 | 0 |
| 2 | 54 | M | 9 | CPP | MTX, phototherapy | Nil | 7.18 | 10.9 | 6 | 5 |
| 3 | 64 | F | 34 | CPP | MTX, acitretin | Vomiting | 5.68 | 23.6 | 26 | 5.2 |
| 4 | 30 | F | 1 | Erythroderma | MTX | Diarrhoea | 6.8 | 48.2 | 0 | 0 |
| 5 | 65 | M | 22 | Pustular psoriasis | MTX, acitretin, phototherapy, CsA | Nil | 6.2 | 44.6 | 0 | 0 |
| 6 | 62 | M | 10 | CPP | MTX, phototherapy, acitretin, CsA | Impaired glucose tolerance | 6.78 | 13 | 1.2 | 0.8 |
| 7 | 59 | M | 6 | Erythroderma | MTX, CsA | Nil | 8.2 | 50.7 | 37.4 | |

CPP: Chronic plaque psoriasis; ADR: adverse drug reactions; MTX: Methotrexate; CsA: Cyclosporine A; PASI: psoriasis area and severity index

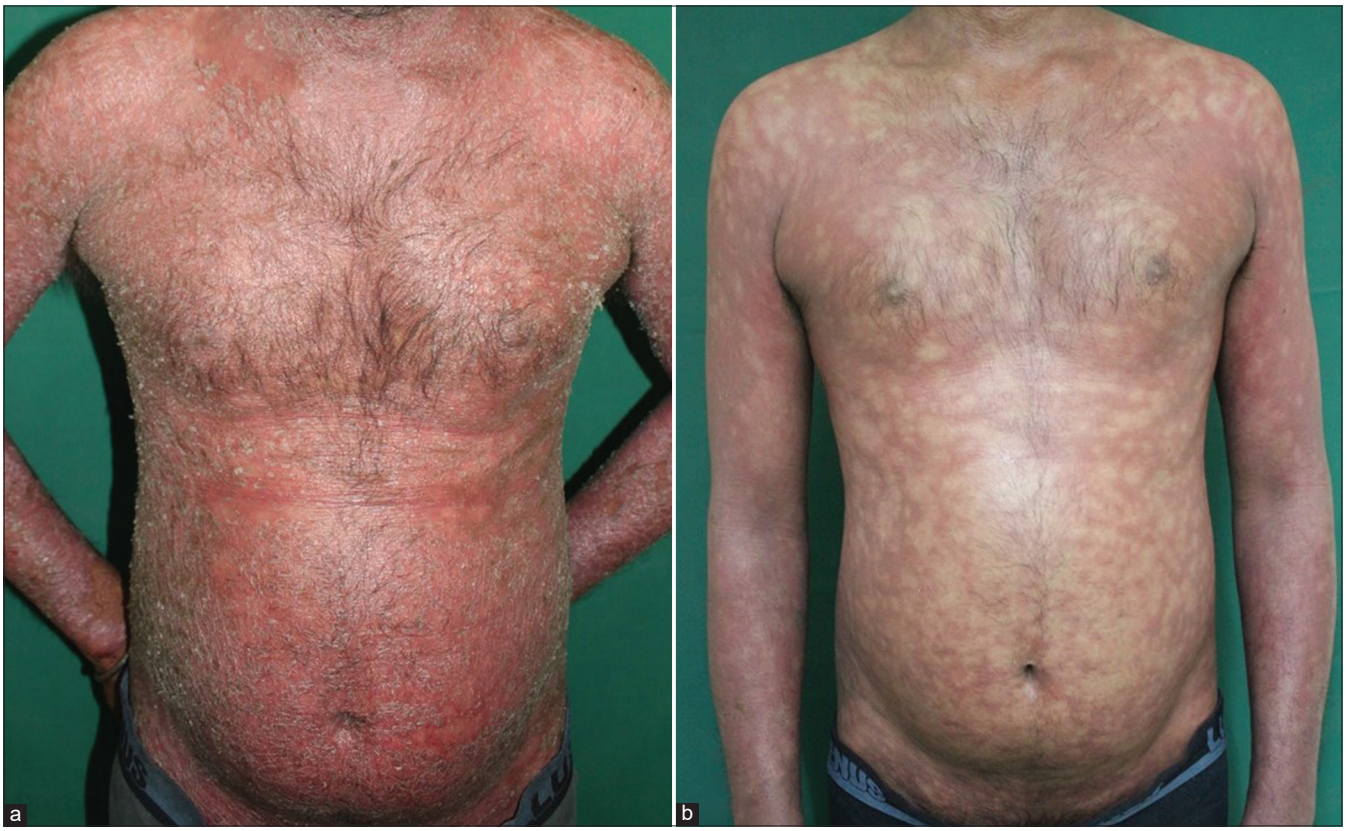


**Figure 1:** (a) a case of psoriatic erythroderma involving more than 90% body surface area (b) Significant improvement at 4 weeks

to higher dosage and longer follow-up period in our study. Mittal *et al*. reported PASI 75 in 19/26 (73.1%) of patients and PASI 90 in 11/26 (42.3%) patients at a dose of 0.1 mg/kg at 12 weeks.[6] In our study, higher percentage of patients achieved PASI 75 ([6/7] 85.7%) and PASI 90 ([5/7]71%) at 12 weeks. This difference may be due to different patient profile. None of the patients developed severe side effects in the study by Mittal *et al*. which was similar to our study.

Oral tacrolimus in the dose of 0.1 mg/kg is safe and effective for the short-term management of severe or recalcitrant forms of psoriasis and can serve as an alternate to the conventionally used cyclosporine for rapid control of the disease. Higher cost and narrow therapeutic index requiring blood level monitoring are the disadvantages of using tacrolimus over cyclosporine. Further studies with more sample size and longer follow-up period would be required to understand the long-term remission and recurrence rates.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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**Conflicts of interest**
There are no conflicts of interest.

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# Targeted phototherapy with excimer light is not efficacious in the management of residual vitiligo patches following whole-body narrowband ultraviolet B light therapy: Results of a retrospective case series

Sir,

Complete repigmentation in vitiligo is difficult to achieve even after adequate whole-body narrowband ultraviolet B light therapy. We undertook a retrospective review of the efficacy of excimer light in producing repigmentation in residual vitiligo patches in non-segmental stable vitiligo (body surface area <5%) patients who had received at least 50 sessions of narrowband ultraviolet B. A total of fifteen cases received excimer light, of which two cases were excluded as they had received less than ten sessions. Thirteen cases with a mean age 25.9 years were included [Table 1]. Seven patients had vitiligo vulgaris while six patients, acrofacial vitiligo. The mean number of narrowband ultraviolet B sessions received before excimer light therapy was 148.8 ± 92.2 (range = 53–310). Besides narrowband ultraviolet B, 12 patients had concomitantly received topical therapy (tacrolimus 0.1% ointment and fluocinolone acetonide 0.1% cream) which was continued during excimer light therapy. The excimer light was given using handheld xenon chloride lamp (Exciplex®, Clarteis, Valbonne, France) two–three times per week on non-consecutive days. It was initiated at a prefixed dose depending on the site of irradiation [Table 1]. The same dose was repeated if erythema persisted at 48 h, while if symptomatic erythema and/or blisters occurred, excimer therapy was omitted and the dose was reduced by 50 mJ in the subsequent session. Patients were advised adequate photoprotection after excimer light therapy. Patients with lesions on or lesions limited to hands, feet, elbows and knees were excluded from the study. The mean number of sessions received was 21.4 ± 8.3. The median dose of excimer therapy delivered was least for head and neck followed by trunk, upper limbs and lower limbs [Table 1]. Efficacy was measured as patient and investigator global assessment (photographic review), in terms of percentage improvement from baseline.

On patient global assessment, median improvement of 10% (range – 5–25%) was appreciated by four (30.7%) patients.

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