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Original Article

Applying the 5-D Itch Scale to Assess Burning Sensation in Oral Lichen Planus: A Short Report from a Randomized Trial Comparing Platelet-Rich Plasma and Triamcinolone Acetonide

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Abstract

Objective: This study aims to assess whether the 5D-Itch scale can be assessed in patients with OLP.

Methodology: We applied the 5-D Itch Scale, a multidimensional instrument validated for dermatologic pruritus but not previously reported in OLP, alongside VAS in a randomized trial of 78 patients with symptomatic OLP receiving intralesional platelet-rich plasma (PRP) or triamcinolone acetonide (TA).

Results: Both instruments produced comparable scores at baseline and at 1 week, and both independently detected significantly greater improvement with PRP by 2 weeks (5-D: 8.05 ± 1.12 vs 8.92 ± 0.98, p< 0.001; VAS: 1.79 ± 0.77 vs 2.77 ± 1.66, p= 0.002).

Conclusion: The concordant time-course across two conceptually distinct instruments supports the responsiveness of the 5-D Itch Scale in oral mucosal disease and its ability to capture symptom dimensions- duration, disability, distribution- that intensity-only scales omit, and it appears to warrant formal validation in OLP populations.

Keywords: Oral lichen planus, 5-D Itch Scale, Burning Sensation, Platelet-Rich Plasma

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Introduction

Oral lichen planus (OLP) is a chronic, relapsing mucosal disorder in which burning sensation, rather than visible lesion extent, is usually the symptom that drives patients to seek and continue treatment.[1,2] Most therapeutic trials in OLP quantify this symptom using intensity-only instruments, principally the VAS, or use the Thongprasom sign score, which grades clinical appearance rather than the patient's subjective sensory experience.[3,4] Neither instrument was designed to capture the multidimensional character of a burning or dysesthetic sensation, which, as in dermatologic pruritus, plausibly varies in degree, duration, distribution, and functional impact.

The 5-D Itch Scale was developed and validated in dermatology as a brief, multidimensional patient-reported instrument sensitive to change over time, scoring five domains- degree, duration, direction, disability, and distribution- for a composite score of 5 (no symptoms) to 25 (most severe).[5] The International Forum for the Study of Itch has since recommended multidimensional assessment over single-item intensity scores in pruritus-related clinical trials.[6] To our knowledge, the 5-D Itch Scale has not previously been applied to OLP-associated burning sensation. We report our experience incorporating it, alongside standard VAS pain scoring, into a randomized trial of intralesional platelet-rich plasma (PRP) versus triamcinolone acetonide (TA) for symptomatic OLP, with the aim of describing its responsiveness and feasibility as a candidate outcome measure for this population.

Methodology

This analysis draws on a parallel-group randomized trial conducted at the Department of Oral and Maxillofacial Surgery at King Edward Medical University/Mayo Hospital, Lahore, following institutional ethical review committee approval and written informed consent from all participants.

Seventy-eight patients with a clinical diagnosis of symptomatic OLP were enrolled by purposive sampling and randomized in equal numbers to Group-A (intralesional PRP) or Group-B (intralesional TA, 20 mg/ml), each receiving two injections one week apart.

Burning sensation was scored using the 5-D Itch Scale and pain using the VAS (0-10) at baseline, and at 1 and 2 weeks after the second injection. For this report, we additionally calculated the percentage reduction from baseline for each instrument at each follow-up point, to characterize their relative responsiveness over the same time-course. Between-group comparisons used the independent-samples t-test ($p< 0.05$ considered significant); percentage reductions are descriptive only, calculated from group means and not subjected to separate significance testing.

Results

Baseline scores were statistically comparable between groups on both instruments (5-D: 17.02 ± 1.11 vs 16.71 ± 0.91, p= 0.186; VAS: 7.13 ± 0.73 vs 7.18 ± 0.76, p= 0.762), as were scores at 1 week (5-D: 11.92 ± 0.77 vs 11.61 ± 1.20, p= 0.185; VAS: 4.18 ± 1.14 vs 4.44 ± 0.60, p= 0.220). At 2 weeks, both instruments independently detected significantly greater improvement in the PRP group (5-D: 8.05 ± 1.12 vs 8.9 2± 0.98, p< 0.001; VAS: 1.79 ± 0.77 vs 2.77 ± 1.66, p= 0.002) (Table 1).

Relative to baseline, VAS scores fell further than 5-D scores by week 2 in both arms (PRP: 74.9% vs 52.7%; TA: 61.4% vs 46.6%), and the between-arm gap in relative reduction was likewise larger on VAS (13.5 percentage points) than on 5-D (6.1 percentage points), even though the 5-D between-group p-value was smaller. This pattern is consistent with the two instruments capturing overlapping but non-identical constructs- VAS an intensity-weighted global rating, the 5-D a composite across degree, duration, direction, disability, and distribution- rather than one instrument simply reproducing the other (Table 1, Figures 1 and 2). No patient discontinued the 5-D questionnaire at any timepoint, and it was completed in the same visit as the VAS without reported difficulty.

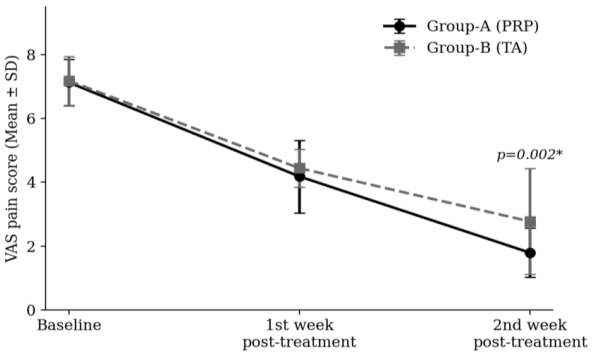


Figure 1

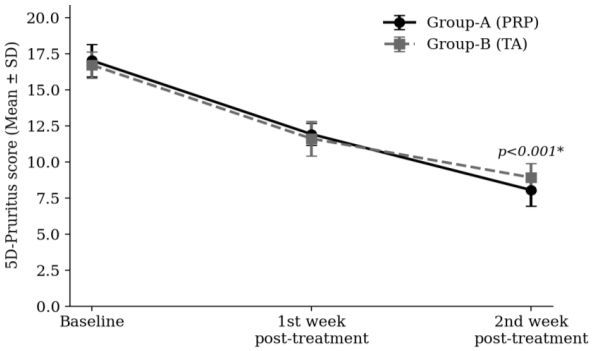


Figure 2

Discussion

To our knowledge, this is the first reported application of the 5-D Itch Scale to assess burning sensation in OLP. Its concordant detection of the same directional treatment effect as VAS, comparable scores at baseline and week 1, a significant PRP advantage by week 2, across two independently scored, conceptually distinct instruments strengthen confidence that the observed effect reflects a genuine clinical signal rather than an artifact of a single measurement tool.

The two instruments were not, however, interchangeable in magnitude: VAS registered a larger relative reduction and a larger between-group gap than the 5-D scale, while the 5-D scale nonetheless returned the smaller p-value. This is plausible given that the 5-D score aggregates duration, disability, and distribution alongside degree- dimensions of OLP's chronic, relapsing, function-limiting course (interference with speech,

Table 1: *VAS and 5-D Itch Scale scores across follow-up, by treatment group*

Timepoint	VAS Group-A (PRP)	VAS Group-B (TA)	p-value	5-D Group-A (PRP)	5-D Group-B (TA)	p-value
Baseline	7.13 ± 0.73	7.18 ± 0.76	0.762	17.02 ± 1.11	16.71 ± 0.91	0.186
Week 1	4.18 ± 1.14	4.44 ± 0.60	0.22	11.92 ± 0.77	11.61 ± 1.20	0.185
Week 2	1.79 ± 0.77	2.77 ± 1.66	0.002	8.05 ± 1.12	8.92 ± 0.98	<0.001
% reduction (Week 2)	74.90%	61.40%	-	52.70%	46.60%	-

mastication, and swallowing) that an intensity-only scale cannot represent- and averaging across five domains can behave differently from a single global rating even when both move in the same direction. This is consistent with IFSI guidance favoring multidimensional over unidimensional itch assessment in clinical trials.[6]

The broader OLP treatment literature has relied almost exclusively on VAS and the Thongprasom score to compare corticosteroid and regenerative therapies, including PRP.[1,3,4,7,8] None of these reports, to our knowledge, has incorporated a multidimensional instrument such as the 5-D scale, leaving the functional and temporal dimensions of OLP-related burning largely uncharacterized in the comparative-effectiveness literature.

This report has several limitations. It is a secondary, hypothesis-generating analysis from a single-center trial with a short 2-week follow-up. The 5-D Itch Scale itself has been validated for dermatologic pruritus but not formally validated for OLP-associated burning sensation, and its content was not modified for oral mucosal application in this trial. Larger, prospective studies with longer follow-up, and formal psychometric validation (test-retest reliability, convergent and discriminant validity) are needed before the 5-D scale can be recommended for routine use in OLP trials.

In conclusion, the 5-D Itch Scale was feasible to administer alongside VAS in a randomized OLP trial and independently detected the same treatment signal, while also capturing symptom dimensions that intensity-only scales omit. It appears to be a promising, complementary outcome measure for symptomatic OLP that merits formal validation in this population.

Ethical Approval: The IRB/EC approved this study via letter no. 856/RC/KEMU dated November 30, 2024.

Conflict of Interest: None

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Authors' Contribution

SSB: Conception.

MIS: Design of the work.

FTZ: Data acquisition, analysis, or interpretation.

FTZ, MIS: Draft the work.

SSB: Review critically for important intellectual content.

All authors approve the version to be published.

All authors agree to be accountable for all aspects of the work.

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