

Appendix 1. General Description of Included Studies

Level of evidence	Study	Design	No. of pts	Sex	Age, y	Condition treated	Treatment; dose; duration	Comparator	Efficacy results	AEs	Follow-up
	Biologics										
4	Chang et al (1)	Case series	7	F	47-71	Erosive MLP	Alefacept; 15 mg IM; 12 wk	Placebo (saline) IM	2 pts achieved notable improvement in PGA of disease severity, MP severity, and IS	Cystitis, UTI	24 wk
5	Fivenson et al (2)	Case report	2	F	25, 57	Generalized LP (including OLP)	Alefacept; 15 mg/wk IM; 12 wk	None	Both pts reported considerable diminution of itching and noticeable improvement within 4 wk	None	20 wk
5	Cheng and Mann (3)	Case report	1	F	54	Erosive OLP	Efalizumab; initial 0.7 mg/kg, then 1.0 mg/kg/wk; 10 wk	None	Resolution of oral erosions, erosive gingivitis, and dysphagia	None	Not mentioned
1c	Heffernan et al (4)	Prospective pilot study	4	F	52-71	Erosive OLP	Efalizumab; 0.7 mg/kg subcutaneously at wk 0, then 1.0 mg/kg/wk; 12 wk	None	Mean reduction in affected mucosal surface area 71.1%; mean improvement in VAS for pain of 82%; mean improvement in OHIP-14 questionnaire of 69.3%	Urticaria, staphylococcus abscess of artificial hip joint (1 pt), drug-induced subacute cutaneous lupus (1 pt)	20 wk
5	Parmentier et al (5)	Case report	1	F	53	Mucocutaneous LP w/ esophageal involvement	Rituximab; 375 mg/m ² /wk; 4 IV courses	None	Dramatic improvement at 3 and 6-mo follow-up; control esophagoscopy at 3 mo, no active LP lesions or stenosis; immunohistochemistry of esophageal mucosa, disappearance of CD20+ cells	None	10 mo
5	Goni Esarte et al (6)	Case report	1	F	59	ELP	Rituximab; 4 IV doses (375 mg/m ² each) per wk; duration not mentioned	None	Endoscopic improvement of lesions; decreased intensity of dysphagia and odynophagia	None	9 mo
2b	Sartori-Valinotti et al (7)	Retrospective chart review	19	15F 4M	Mean, 57	Otic LP	Topical tacrolimus (1 pt also received rituximab); dose and duration not mentioned	None	One pt w/ severe LP of the ear, oral cavity, esophagus, and genital area reported remarkable relief w/ rituximab prescribed primarily for Sjögren syndrome	Not mentioned	4.9 y

5	Rebora et al (8)	Case report	1	F	67	Erosive LP (oral and vaginal)	Basiliximab; 2 bolus IV infusions (20 mg) 4 days apart; duration not mentioned	None	Basiliximab cleared erosions and abated symptoms temporarily (rebound effect after 1 mo)	Appearance of antimitochondrial antibodies and increase in gamma-glutamyl transferase	Not mentioned
5	Ho et al (9)	Case report	1	F	67	Recalcitrant vulvovaginal gingival syndrome	Adalimumab; 160 mg subcutaneously, 80 mg 2 wk later, then 40 mg every other wk; 12 wk	None	Notable improvement of genital and oral lesions (edema and erosions) after 4 wk and complete resolution after 12 wk	None	Not mentioned
5	Chao et al (10)	Case report	1	F	52	Cutaneous LP and MLP (oral and vulvar)	Adalimumab; 40 mg subcutaneous injections every other wk; 22 wk	None	Almost clear response by 6 wk and complete clearance, including oral lesions, at 8 wk	None	Maintained almost clear response of oral/vulvar LP beyond wk 50
5	Yarom et al (11)	Case report	1	F	56	OLP	Etanercept; 25 mg twice/wk; 10 wk	None	Notable symptom relief (up to 90%) 2 wk after start of therapy; keratinization of eroded mucosa after 4 wk	Mild-to-moderate tenderness at injection site	3 y
	MMF										
2b	Ashack et al (12)	Retrospective review	53	37F 16M	Mean, 60	MLP (oral/genital)	Topical or oral corticosteroids, MMF, or cyclosporine; MLP algorithm: Step 1, TCS or tacrolimus b.i.d. Step 2, burst and taper of prednisone Step 3, MMF Step 4, oral cyclosporine + MMF and TCS or calcineurin inhibitor; MMF mean duration 1.7 y, Cyclosporine, 3-7 mo	None	Average number of lesions reduced from 3.77 to 1.67 ($P<.001$); average disease activity reduced from 2.73 to 0.90 ($P<.001$); average pain decreased from 2.03 to 1.03 ($P<.001$).	MMF: fatigue, anemia, diarrhea, elevated blood pressure, UTI	Not mentioned
5	Frieling et al (13)	Case report	3	2F 1M	17-54	Disseminated and erosive LP	MMF; 2 g/d; 5-12 mo	None	Complete remission in 2 pts, and substantial improvement in the other	None	19-65 mo

						(including oral in all pts and genital in 1)					
2b	Wee et al (14)	Retrospective review	10	9F 1M	16-54	Recalcitrant erosive OLP (vulvovaginal-gingival, penogingival, oral)	MMF; 500 mg/d increased according to tolerance and disease activity, aiming for 2 g b.i.d. by 2 mo; mean 3.7 y	None	6 pts achieved remission, 1 had well-controlled disease, and 3 had partially controlled disease.	Headache and tiredness (2 pts)	4.2 y
5	Deen and McMeniman (15)	Case report	1	F	66	Erosive genital LP	MMF; 500 mg b.i.d. increased to 1.5 g/d after 6 mo; 3 mo	None	Improvement in pain, dysuria, and pruritus within 4 wk of treatment initiation	None	Several months
	Azathioprine										
4	Verma et al (16)	Case series	9	5F 4M	Mean (range), 32 (5-54)	Severe erosive oral or generalized LP	Azathioprine; 50 mg b.i.d. orally (about 2 mg/kg/d); 3-7 mo (mean, 5 mo)	None	7 pts, excellent response; 1 pt, good response; 1 pt, poor response; response considered excellent if 75%-100% improvement in lesions and itching/irritation, good if 50%-75%, and poor if <50%	Bleeding from the gums due to gingivitis	6-9 mo
5	Lear and English (17)	Case report	2	F	60, 74	OLP and skin LP	Azathioprine; 50 mg b.i.d., after 2 mo, dose reduced to 50 mg/d; 2 mo and 5 mo	None	Decrease in size of erosions within 1 mo; complete healing after 2 mo; no recurrence at 6 mo	None	6 mo
	MTX										
1b	Lajevardi et al (18)	Prospective open trial	18	13 F 5 M	NA	Erosive OLP	MTX; 15 mg/wk; 12 wk	None	Partial response or better in 15 (83.3%) pts. Statistically significant reduction in Thongprasom scale and VAS scores ($P<.001$)	.Skin eruption, nausea, epigastric pain, elevated liver enzymes	12 wk
1b	Chauhan et al (19)	Prospective observational study	45	Group: A, 12F 3M B, 9F 6M C, 8F	Group, mean (SD): A, 44.47 (13.30) B, 46.33	OLP	Group A, topical triamcinolone; 0.1% oral paste 3 times/d; 16 wk or until complete clinical remission	Group: B, MTX (0.3 mg/kg/wk) C, triamcinolone + MTX	Pts in combination group had better reduction in outcomes (clinical severity score, VAS and quality of life impairment questionnaire) compared to other 2 groups	MTX: nausea/vomiting, anemia; triamcinolone: telangiectasia/ atrophy at site of application	Not mentioned

1b	Zhu et al (31)	RCT	150	106F 44M	Mean (SD), 44.5 (13.3)	OLP (reticular, erosive, atrophic atypical reticular, and atypically erosive)	HCQ; 200 mg/d; 1 mo	Prednisone 10 mg/d, reduced to 5 mg/d when 50% reduction in lesion size achieved	Serum concentrations and mRNA expression of Tregs, IL-8, TGF-β1, and IL-10 higher in OLP pts than healthy controls before tt. Frequency of Tregs was downregulated after 2 wk of HCQ, whereas prednisone had no effect on Tregs levels	None	Not mentioned
1c	Yeshurun et al (32)	Clinical trial	21	15F 6M	Mean (range), 55 (30- 82)	OLP	HCQ sulphate; 400 mg/d; 1-36 mo	None	Five (24%) pts, complete remission; 12 (57%), moderate to marked improvement; 3 (14%), no improvement; for 1 pt therapy terminated after 1 mo due to AEs; response to therapy observed after 2- 4 mo; 3 of 6 pts who responded to therapy flared on stopping	Blurred vision, visual field defects, rash, hyperpigmentation, elevated kidney function tests	Not mentioned
1c	Eisen et al (33)	Clinical trial	10	9F 1M	Mean (range), 59 (40- 66)	OLP	HCQ; 200-400 mg/d; 6 mo	None	Nine of 10 pts had excellent response to therapy; 3 of 6 pts w/ erosions at baseline had complete healing; pain relief and reduced erythema observed after 1-2 mo of therapy, but erosions required 3-6 mo to resolve	None	6 mo
5	De Argila et al (34)	Case report	1	F	51	OLP on lower lip (solitary lesion)	Chloroquine phosphate; 250 mg b.i.d. for 3 mo, then reduced to 250 mg b.i.d. for 3 mo; 3 mo	None	Excellent response within 3 mo; symptoms disappeared completely and only mild erythema remained	None	Not mentioned
2b	Vermeer et al (35)	Retrospective chart review	15	15F	55 years (range 23–82)	ELP of the vulva and vagina	HCQ 200 - 800 mg for 23.8 months	None	60% of patients responded to HCQ, with almost half experiencing long-term effect – clinical response was defined as a decrease in PGA score	GI disturbance, dizziness, infection, headache	38 mo
	Thalidomide										
5	Camisa et al (36)	Case report	1	M	70	Recalcitrant erosive OLP	Thalidomide; 100 mg/d; 1 y 5 mo	None	Complete resolution of desquamative gingivitis after 11 mo	Dizziness, low extremity edema,	Not mentioned

										erythematous-squamous rash of face and trunk	
5	Petropoulou et al (37)	Case report	1	M	NA	Erosive oral and genital LP	Thalidomide; 50 mg/d for 2 wk, 25 mg/d for 1 yr, 25 mg every other d for 6 mo; 18 mo	None	Complete healing of erythematous and erosive areas on penis and whitish mouth lesions	Muscle cramps and weakness, numbness, and lower extremity burning	Not mentioned
	IVIg										
5	Nakashima et al (38)	Case report	1	M	57	Refractory OLP	IVIg; 400 mg/kg/d for 5 d; 2 cycles	None	VAS decreased by 30% after 1 wk of IVIg and lip erosions and ulcers improved after 2 mo	None	Not mentioned
1c	Bender et al (39)	Clinical trial	3	F	53-78	Refractory OLP	Adjuvant IVIg + acitretin; IVIg 2 g/kg/m cycle, acitretin 0.3-0.5 mg/kg/d (ie, 30 mg/d); at least 7 mo	None	Pts showed mixed responses to adjuvant IVIg, ranging from therapeutic efficacy to no response	IVIg-induced leukopenia	Not mentioned
	BCG-PSN										
1c	Nasr et al (40)	Clinical trial	11	6F 5M	7-69	OLP	BCG-PSN; intradermal injections of 0.5 mL (0.453 105-15 3 105 cfu); twice/wk for 3 wk	None	Significant differences in decrease of lesion areas, NRS, REU, and VAS scores; most pts achieved CR after 3 wk of treatment	Swelling at injection sites	3 mo
	Doxycycline/minocycline/erythromycin										
5	Kandula et al (41)	Case report	1	M	56	Ulcerative LP on plantar foot and lateral tongue	Oral and TCS, topical tacrolimus, and oral doxycycline; dose not mentioned; 4 wk	None	Marked clinical improvement of the cutaneous and oral mucosal lesions	Not mentioned	Not mentioned
2b	Cooper et al (42)	Prospective cohort	114 (31 systemic treatment)	F	Mean, 56.9	Erosive vulvar LP	Minocycline, erythromicine, prednisone, acitretin, cyclosporine, azathioprine, HCQ, thalidomide, or colchicine; dose and duration not mentioned	None	Minocycline: 33% good, 33% partial, and 33% poor response Erythromicine: 50% good, 33% partial, and 17% poor response Prednisone: 33% good, 33% partial, and 33% poor response Acitretin, cyclosporine, azathioprine, HCQ, thalidomide, and colchicine:	Not mentioned	72 mo

									100% poor response		
	Dapsone										
5	Beck et al (43)	Case report	1	F	74	Erosive LP, oral and toes	Dapsone; 50 mg/d, gradually increased to 150 mg/d; 7 mo	None	Buccal mucosa and toe lesions completely healed after 7 mo, tongue erosions reduced to ¼ of pretreatment size, itching mouth pain disappeared	None	7 mo
5	Basak et al (44)	Case report	1	M	9	Generalized LP, oral and nail	Dapsone; 50 mg daily (1.5 mg/kg/d) for 8 mo, increased to 75 mg/d (2.5 mg/kg/d) for 5 mo; 13 mo	None	Itching subsided within 1 mo and disappeared in 2 mo; trunk lesions started flattening after 3 mo; at 8 mo, still active lesions on limbs, so dosage was increased and lesions cleared at 5 mo; oral mucosal lesions were cleared	None	Not mentioned
1c	Chopra et al (45)	Clinical trial	75	NA	NA	LP	Dapsone and chlorpheniramine maleate; dose and duration not mentioned	Local corticosteroids and chlorpheniramine maleate	Total efficacy of dapsone regimen was 18% higher than corticosteroid regimen	Not mentioned	Not mentioned
	Metronidazole										
1c	Buyuk et al (46)	Clinical trial	20	14F 6M	Mean (range), 40.7 (14-62)	Generalized LP (7 pts w/ OLP)	Metronidazole; 500 mg b.i.d.; 20-60 d	None	15 (78.9%) pts responded to metronidazole (13 complete and 2 partial); worsening of lesions in 1 of 4 nonresponders; 3 of 7 oral lesions (all in CR pts) cleared after metronidazole	Mild headache, nausea	5-36 mo
1c	Rasi et al (47)	Clinical trial	49 (2 mucosal)	25F 24M	Mean (SD), 48.3 (12.3)	Cutaneous LP and MLP	Metronidazole; 250 mg/8 h; 3 mo	None	Overall response for MLP, 66.6%; overall response for itching, 75%; pts w/ CR were symptom-free in <3 mo	Metallic taste (1 pt)	3 mo

	Griseofulvin										
4	Aufdemorte et al (48)	Case series	3	F	68, 63, 52	Erosive OLP	Griseofulvin; 500 mg b.i.d., reduced to 250 mg/d after 3 mo; 12 mo and 6 mo (duration not mentioned for Pt 3)	None	Pt 1: complete remission of oral lesions at 8 wk; Pt 2: course paralleled first pt, but responses more rapid, complete remission at 10 wk; Pt 3: marked clinical improvement at 10 wk w/ few persistent erosions, complete remission not achieved; response of oral lesions was dramatic; response intervals varied	None	15 mo and 9 mo (NA for Pt 3)
2b	Massa et al (49)	Chart review	29	20F 9M	23-76	OLP only (11 pts) and LP of skin, genitalia, nails, and scalp (18 pts)	Griseofulvin; 500 mg/d; 3 wk-12 mo	None	11 pts w/ OLP only: 3 complete remission, 3 marked improvement between 3 wk and 3 mo; overall response rate 54.5% in cutaneous LP; benefit from griseofulvin much less likely	Rash, nausea, constipation, diarrhea	Not mentioned
1c	Matthews et al (50)	Clinical trial	23 (11 completed)	NA	NA	OLP	Griseofulvin; 500 mg b.i.d.; 3 mo	None	Symptomatic benefit in 21% of 23 pts, but no clinical improvement; half of pts withdrew due to AEs or lack of symptom improvement; possible placebo effect, since no clinical improvement noted by observation or photos	Headaches, nausea, vomiting, diarrhea	Not mentioned
1c	Bagan et al (51)	Clinical trial	7	5F 2M	34-68	OLP (4 erosive and 3 reticular)	Griseofulvin; 500 mg b.i.d.; mean, 2.5 mo	None	No improvement; in 4 pts (2 w/ erosive and 2 w/ reticular) condition worsened; in 2 pts, lesions remained unchanged from baseline	Headaches	Not mentioned

5	Brehmer et al (55)	Case report	3	F	78, 77, 58	Mucocutaneous and cutaneous LP	Oral alitretinoin; 10 mg/d; 4 wk	None	Oral lesions and pain disappeared completely, pts remained symptom-free after discontinuation	Hypertriglyceridemia, headache and dizziness	Not mentioned
5	Kolios et al (56)	Case report and literature review	1	F	54	Cutaneous, oral, and ELP	Oral alitretinoin; 30 mg/d; 2 cycles of 6 mo each, 12 mo total	None	Oral/skin changes and dysphagia completely resolved within 4 wk; nail changes within 6 mo	Mild sporadic headache	12 mo
	Isotretinoin										
4	Camisa et al (57)	Case series	6	3F 3M	35-72	Erosive OLP	Systemic isotretinoin; 10-50 mg/d (0.5 mg/kg/day, raised to a maximum of 1 mg/kg/d); 8 wk	None	4 of 5 evaluable pts were improved after 8 wk, but none were completely cleared	Cheilitis, dry skin, headache, rash, joint pain, pruritus (all pts)	4 wk
	Vitamin A										
5	Chopra and Kaur (58)	Case report	1	M	44	Hyperkeratotic OLP	Vitamin A; 3 tablets/d (50,000 IU each); 4 wk	None	Positive response when vitamin A was added to corticosteroid and dapsone regimen; regression in size and thickness of lesion after 1 mo	None	Not mentioned
	Corticosteroids										
2b	Harewood et al (59)	Retrospective chart review	4	F	40-65 (symptom onset)	ELP	Prednisone; 60 mg/d (1 pt), 40 mg/d (3 pts), then rapidly tapered; 2-3 wk	None	3 pts responded dramatically within 1 mo; 4 th pt flared every time prednisone tapered below 10 mg, remained on 10 mg w/o symptoms	None	Not mentioned
5	Kumar et al (60)	Case report and literature review	1	M	58	Atrophic OLP	Oral mini pulse therapy with betamethasone; 5 mg/d for 2 d/wk for 3 wk, tapered by 0.5 mg every wk; at 15 th wk, pt was taking 0.5 mg/d, maintained for 3 wk; 18 wk	None	Gradual and consistent reduction in burning sensation, complete remission of oral lesions	Decrease in white blood cell count and hemoglobin, increase in erythrocyte sedimentation rate	4 mo
4	Wedgeworth et al (61)	Case series	5	F	49-58	ELP	Combination of balloon dilatation and intralesional triamcinolone; each stricture injected w/ 40-60 mg of triamcinolone (10 mg/mL normal saline aliquots) in 4	None	Most cases, full resolution of dysphagia generally sustained for several months	Pneumomediastinum (1 pt)	18-54 mo

							quadrants of the stricture; graduated balloon dilatation performed through scope, graduated balloons for 30 s; Average interval between treatments was 8.3 mo; pts did not become tolerant to procedure and time between procedures tended to lengthen				
2b	Fahy et al (62)	Retrospective chart review	100	F	Mean, 60.3	Genital (vulval) LP	Corticosteroids (22), MTX (17), MMF (10), acitretin (1), isotretinoin (3), HCQ (12), dapsone (3), colchicine (1), azathioprine (5), cyclosporine (4), or IVIG (2); dose and duration not mentioned	None	Most pts who received systemic treatments did not achieve remission; of pts w/ disease remission, approximately ½ were prescribed systemic medications; 82% w/ remission were receiving care through the dermatology service	Dermatomyositis and myositis induced by oral corticosteroid therapy (1 pt)	24-42 mo
4	Franco et al (63)	Case series	6	5F 1M	NA	ELP	Topical fluticasone (3), prednisone, intralesional triamcinolone (2), or budesonide (1); fluticasone b.i.d, prednisone 20 mg/d, intralesional triamcinolone 20 mL (10 mg/mL), budesonide 3 mg b.i.d, then 3 mg/d; fluticasone 8 wk, prednisone 2 wk, budesonide 10 mo	None	Symptoms resolved w/ treatment, but recurred after 10 mo (2 pts), 1 yr (1 pt), and 2 y (1 pt)	Not mentioned	1-7 y
5	Sheehan- Dare et al (64)	Case report	1	F	50	ELP	Prednisolone; 20 mg/d; duration not mentioned	None	Rapid symptomatic improvement within days; when prednisolone reduced to 5 mg/d, dysphagia returned, resolved when increased to 20 mg/d; repeated attempts to withdraw corticosteroids resulted in recurrence of dysphagia; pt was	Not mentioned	Not mentioned

									symptom-free on prednisolone 10 mg/d		
5	Ynson et al (65)	Case report	1	F	63	ELP	Fluticasone propionate; 220 µg b.i.d.; 6 wk	None	Resolution of symptoms at 4-wk follow-up; 15-wk follow-up endoscopy: small light pink plaques in mid-esophagus, normal looking mucosa in rest of esophagus	Not mentioned	Not mentioned
5	Sato et al (66)	Case report	1	F	85	ELP	Prednisone; 20 mg daily; duration not mentioned	None	Symptoms improved within 1 wk, oral corticosteroid tapered by 5 mg every 2 wk until reached 5 mg/d; endoscopic and histologic improvement 3 mo after prednisone initiation; clinical remission remained for 2 y	Not mentioned	2 yrs
2b	Bradford and Fischer (67)	Retrospective chart review	131	F	Mean, 57	Vulvovaginal LP	Oral prednisolone (22), oral prednisolone + TCS (31), oral prednisolone + MTX (1), or MTX + TCS (1); prednisolone 5-50 mg/d, MTX 5-7.5 mg/wk; duration not mentioned	None	98% saw improvement of symptoms and examination findings in a mean of 7.5 wk; on follow-up, 77% had stable disease, while 23% had unstable disease and progressive tissue destruction	Prednisolone: mood disturbance	1 mo-15 y (mean, 6.4 y)
5	Teixeira et al (68)	Case report	1	M	50	ELP	Prednisolone; 40 mg; duration not mentioned	None	Rapid improvement of odynophagia and dysphagia	Not mentioned	Not mentioned
2b	Kern et al (69)	Prospective cohort	20 (of 32 with LP)	12F 8M	Mean (range), 55 (27-74)	ELP	Prednisone, azathioprine, topical budesonide, or acitretin; prednisone 50 mg/d, azathioprine up to 2 mg/kg/d, and topical budesonide 0.5 mg b.i.d.; acitretin not mentioned; duration not mentioned	None	Treatment with topical budesonide formulation or systemic corticosteroids was successful in most pts, w/ proven ELP and reversed functional esophageal stenosis	Not mentioned	1.5-6 y (mean, 3.6 y)

5	Menges et al (70)	Case report	1	F	56	ELP	Methylprednisolone and budesonide solutions; 20 mg/d; 3 wk	None	Immunosuppressive therapy with systemic and local corticosteroid application did not prevent recurrent stenosis, endoscopic dilatation had to be performed 5 times in 5 y	Not mentioned	5 y
1b	Singh et al (71)	RCT	40	20F 20M	Mean (SD), 32 (10.5)	OLP	Topical triamcinolone, oral dapsone, topical tacrolimus, or topical retinoid; triamcinolone buccal paste 0.1% b.i.d., dapsone 100 mg b.i.d. + iron and folic acid tablets, topical tacrolimus 0.1% b.i.d., topical retinoid b.i.d.; 3 mo	Not mentioned	In all groups, significant improvement in symptoms and sign scores, steroidal and non-steroidal agents had equal efficacy; dapsone had greater efficacy than topical retinoid, but no significant differences for dapsone vs topical tacrolimus or topical retinoid vs topical tacrolimus	Mild tingling in oral cavity in pts treated with topical agents	Not mentioned
1b	F Agha-Hosseini et al (72)	RCT	27	17F 10M	Mean 49.81 (\pm 9.63)	OLP	Combination of HA/triamcinolone or triamcinolone alone was injected intralesionally, with 1 ml of the medication injected for each 2 cm ² surface area of the lesion	Triamcinolone alone	Rate of symptom recurrence was 74.1% on control side and 11.1% on test side. Group treated with combination of HA and triamcinolone experienced significantly better resolution of lesions and symptoms	None	6 mo
4	Kurt et al (73)	Case series	3	2F 1M	22/49/52	OLP	Intra-lesional corticosteroid injection: 0.4 mL of a 10 mg/mL solution of triamcinolone acetonide (TA) applied directly into the lesion twice at a 2-week interval	None	Resolution of symptoms of pain, burning and sensitivity and healing of lesions in 1 month	None	1 mo
	Diode laser										
1b	Agha-Hosseini et al (74)	Randomized controlled trial	28	21F 7M	Mean, 50.7	Erosive-atrophic OLP	Diode laser; WL 633/890 nm, energy density 0.3-0.5 J/cm ² , irradiation 5 s; 5 sessions every other day	CO ₂ laser surgery	Laser-treated group showed better improvement than CO ₂ group ($P < .001$)	None	3 mo

1b	Dillenburg et al (75)	Randomized controlled trial	42	35F 7M	Mean, 58.2	Erosive-atrophic reticular OLP	Diode laser (red); WL 660 nm, energy density 6 J/cm ² , power density 1,000 mW/cm ² , irradiation 6 s; 3 sessions/wk (12 sessions)	Clobetasol	Laser was more effective (<i>P</i> <.001)	None	2 mo
1c	El Shenawy et al (76)	Controlled trial	24	18F 6M	Mean, 53.6	Erosive-atrophic OLP	Diode laser; WL 970 nm, power output 3 W, irradiation 8 min; twice/wk (maximum 10 sessions)	Triamcinolone	Corticosteroid group showed significantly lower mean VAS scores than laser group (<i>P</i> =.02)	None	Not mentioned
1c	Othman et al (77)	Controlled trial	24	18F 6M	35-70	Erosive-atrophic reticular OLP	Diode laser; WL 970 nm, power output 2 W, irradiation 8 min; twice/wk (10 sessions)	Triamcinolone	Improvement in signs of disease w/ no difference between 2 groups	None	Not mentioned
1b	Kazancioglu et al (78)	Randomized controlled trial	120	64F 56M	Mean, 42.6	Erosive-atrophic OLP	Diode laser; WL 808 nm, energy density 1.5 J/cm ² , power density 10 mW/cm ² , irradiation 2.5 min; twice/wk (10 sessions)	Group: 1, ozone 2, dexamethasone 3, placebo	Improvement in all groups, but significantly better in ozone and corticosteroid groups	None	6 mo
	PDT										
4	Rakesh et al (79)	Case series	10	8F 2M	20-70	Erosive OLP	5-ALA-mediated PDT; 4% (4 mg) 5- ALA gel applied twice (2 mg each application) at 1 h interval; red light emitted by diode laser WL 600–670 nm, energy density of 80 J/cm ² ; duration not mentioned	No treatment on contralateral side	Clinical response to PDT similar in both men and women, for treatment and controls; greater reduction was noted in buccal mucosal and tongue lesions than in gingiva	None	Every 6 mo for 4 y
1b	Lundquist et al (80)	RCT	18	13F 5M	Mean, 59	OLP	Photochemotherapy with 8-MOP and long-wave UV-A; WL 320-400 nm w/ UV-A irradiance 17.5 mW/cm ² , UV-A dose 0.75 J/cm ² , increased by 0.25 J/cm ² every other session, 8-MOP 0.6 mg/kg orally 2h before irradiation; 12	No treatment on contralateral side (buccal mucosa)	Marked improvement in 9 pts, slight improvement in 4 pts, no improvement in 3 pts	Nausea, dizziness, eye symptoms, numbness, headache	12 mo

							times at intervals of 2-3 d, total dosage 16.5 J/cm ²				
1b	Jajarm et al (81)	Randomized controlled trial	25	Study, 8F 3M control, 9F 5M	Group, mean: 48.71 control, 43.73	Erosive-atrophic OLP	Toluidine blue-mediated PDT; WL 630 nm, energy density 1.5 J/cm ² , power density 10 mW/cm ² , irradiation 2.5 s; twice/wk (10 sessions)	Corticosteroid (dexamethasone mouthwash)	Traditional corticosteroid therapy showed better results than toluidine blue-mediated PDT	None	12 mo
1b	Mostafa et al (82)	RCT	20	17F 3M	Group, mean (SD): A, 47.0 (6.94) B, 48.6 (5.25)	Erosive OLP	MB-PDT; WL 660 nm, intensity 100-130 mW/cm ² , 5% MB-PDT once/wk, thin layer of TCS 3 times/d; 2 mo	Conventional TCS (kenakort A-orabase)	MB-PDT much more effective in pain reduction and lesion regression than TC	MB-PDT: edema and mild burning sensation during application	2 mo
2b	Cosgarea et al (83)	Prospective case-controlled pilot study	20	17F 3M	62 ± 8.66	OLP	PDT was performed within 14 days on the most extensive oral lesion in 4 sessions (day 1, 3, 7, 14)	None	Reduction of clinical parameters (lesion size, ABSIS, Thongprasom-score), improvement of all quality-of-life (QOL) items and significant decrease of relative number of CD4+ and CD8+ T cells in mucosal OLP-lesions	None	6 weekskurt
	PRGF										
4	Pinas et al (84)	Case series	4	F	43-59	Refractory ulcerative erosive OLP	PRGF; 1 infiltration (2 pts) or 2 infiltrations (2 pts), 1 pt needed 3 rd infiltration at 6 mo posttreatment due to flare-up; duration not mentioned	None	Complete healing of lesions (80%-90% size reduction) after first PRGF infiltration in 2 pts, other 2 needed a 2 nd infiltration to achieve complete healing; after 1 st infiltration, pain was reduced by 5.75 points, further reduced by 2 points after 2 nd	None	6 mo

2b	Pinas et al (85)	Retrospective study	10	F	Mean (SD), 48 (12)	Erosive OLP	PRGF; 1 infiltration (8 pts) or 2 infiltrations (2 pts); duration not mentioned	None	Complete remission	None	Mean (SD), 13 (1) mo
	SAFG										
5	Arcuri et al (86)	Case report	1	F	69	OLP	SAFG; purified fat graft was injected with blunt cannulas in lips and cheek with 10 mL of pure centrifuged and purified fat; duration not mentioned	None	Improvement in pain according to VAS, chewing, swallowing, mouth opening, and appearance of lesions	None	1 wk, 4 wk, 3 mo, and 6 mo after treatment
	Curcuminoids										
1b	Chainani-Wu et al (87)	Randomized, placebo-controlled, double-blind clinical trial	33 (28 completed)	23F 10M	Mean, 60.6	OLP (atrophic or erosive)	Curcuminoids (+ prednisone 60 mg/d for 1 st week); 2,000 mg/d; 7 wk	Placebo	First interim analysis: no significant difference between placebo and curcuminoids; study ended early for futility; reaching a conclusion regarding efficacy of curcuminoids based on this study was not possible; curcuminoids at this dose were well tolerated and results suggest that for future studies, an RCT of shorter duration w/ a larger sample size, using higher curcuminoid dose, w/o initial course of prednisone should be considered	None	Not mentioned
1b	Chainani-Wu et al, 2011 (88)	Randomized, placebo-controlled, double-blind clinical trial	20	10F 10M	Group, mean: 60.8 placebo, 56.2	OLP	Curcuminoids; 2,000 mg 3 times/d (6,000 mg/d); 12 d	Placebo	Percent reduction in NRS, erythema, ulceration, and total MOMI scores not significant in placebo group, but significant in curcuminoid group; AEs uncommon in both groups	Diarrhea (most frequent), constipation, abdominal pain, heartburn, nausea	2 wk
2b	Chainani-Wu et al, 2011 (89)	Descriptive retrospective cohort	43 (25/33 from 1 st RCT and 19/20 from	NA	NA	OLP	Curcuminoids; mean daily dose 2,137.5 mg (1 st RCT) and 5,058 mg (2 nd RCT); mean duration 30 mo (1 st RCT) and	None	72% from 1 st RCT and 100% from 2 nd took over-the-counter curcuminoids after trial completion; 60% reported reduction of symptoms	Mild abdominal discomfort, diarrhea; occurrence was dose related	1 st RCT: mean, 68.2 mo; 2 nd RCT: mean, 15.8 mo

			2 nd RCT)				9.6 mo (2 nd RCT)		w/ curcuminoids, 35% were unsure, and 5% reported it did not reduce symptoms		
	TGPC										
1b	Zhou et al (90)	Prospective, randomized, controlled clinical trial	73/81 (3 dropped out, 5 absconded)	42F 31M	41-49	OLP (44 reticular and 37 erythematous/erosive)	Topical or systemic corticosteroids + TGPC; oral prednisolone 15 mg/d for 2 wk/mo, 1,200 mg TGPC; 4 mo	Topical or systemic corticosteroids	Effective rates of combined treatment were statistically higher versus control groups (efficacy assessed through VAS and clinical signs)	Diarrhea	6 mo
	Apremilast										
5	AbuHilal et al (91)	Case report	1	F	44	Erosive OLP w/ desquamative gingivitis	Apremilast; 30 mg/d; 3 mo	None	Marked reduction in erythema and erosions on upper and lower gingivae, considerable reduction in pain and discomfort with improvement of quality of life w/ easier speaking, eating, and chewing	Nausea	Not mentioned
5	Hafner et al (92)	Case report	1	F	74	LP mucosae-associated stenotic esophagitis (refractory to immunosuppressive treatment w/ pulsed IV methylprednisolone)	Apremilast; 20 mg/d; 4 wk	None	Complete clinical remission (of dysphagia and erosive stomatitis); control esophagoscopy, marked recovery of the esophageal mucosa w/ no recurrence of former stenosis	None	Not mentioned
4	Bettencourt (93)	Case series	3	F	73, 71, 66	Recalcitrant OLP	Apremilast; 30 mg b.i.d.; 6 mo w/ tapering to once/d after complete resolution of lesions	None	At 2 to 4 wk follow-up, pts pain-free and sores cleared completely; 1 pt received a course of oral prednisone (40 mg) while on apremilast and another short course (20 mg for 3 days) 2 mo later for a mild flare, currently on low-dose prednisone (5	Nausea, diarrhea	6 mo

									mg daily) and apremilast to prevent flares		
4	Paul et al (94)	Case series	20	7F 3M	NA	LP (1 OLP)	Apremilast; 20 mg b.i.d.; 12 wk	None	OLP pt: oral lesions improved from 40% to 12% involvement of bilateral buccal mucosa; on day 15, PGA mucosal disease improved to "marked resolution" and stabilized to "moderate improvement" at end of study	Headache, nausea	4 wk
	Levamisole										
1c	Lin et al (95)	Clinical trial	89	NA	Mean, 55.1	OLP	Levamisole; 50 mg b.i.d. in pts w/ 30-50 kg body weight or 50 mg 3 times/d for pts w/ 50-70 kg body weight, for 3 consecutive days at beginning of each 2-wk interval; 12 mo	None	1 TGA positive, 48 TMA positive; significant reduction in serum TGA/TMA levels and improvement in signs/symptoms of OLP (reduction in lesion size and pain, healing of erosive lesions)	None	Not mentioned
1c	Lin et al (96)	Clinical trial	79 (all ANA positive)	NA	55	OLP (71 erosive, 8 nonerosive)	Levamisole; 50 mg b.i.d. in pts w/ 30-50 kg body weight or 50 mg 3 times/d for pts w/ 50-70 kg body weight, for 3 consecutive days at beginning of each 2-wk interval; 2-38 mo	None	Reduced high serum ANA to undetectable level, improvement in signs/symptoms of OLP (reduction in lesion size and pain, healing of erosive lesions)	None	Not mentioned
	Cyclophosphamide										
5	Paslin (97)	Case report	3	2F 1M	50, 63, 74	Generalized LP (including OLP)	Cyclophosphamide; 50-100 mg/d; 6 wk	None	Total resolution of LP, including oral lesions at end of wk 10; pts were disease free 3-15 mo after completion of treatment	Leukopenia, thrombocytopenia	3-15 mo

Abbreviations: 8-MOP, 8-methoxypsoralen; AE, adverse event; ALA, aminolevulinic acid; ANA, antinuclear antibody; BCG-PSN, polysaccharide nucleic acid of Bacillus Calmette-Guérin vaccine; b.i.d., twice a day; cfu, colony-forming unit; CR, complete response; ECP, extracorporeal photochemotherapy; ELP, esophageal lichen planus; F, female; HCQ, Hydroxychloroquine; IL, interleukin; IM, intramuscular; IS, itch severity; IV,

intravenous; IVIG, intravenous immunoglobulin; LP, lichen planus; M, male; MB-PDT, methylene blue–mediated photodynamic therapy; MLP, mucosal lichen planus; MMF, mycophenolate mofetil; MOMI, modified oral mucositis index; MP, mucosal pain; MTX, methotrexate; NA, not available; NRS, numeric rating scale; OHIP-14, Oral Health Impact Profile-14; OLP, oral lichen planus; PDT, photodynamic therapy; PGA, Physician Global Assessment scale; PRGF, plasma rich in growth factors; pt, patient; PVAS, pain visual analogue scale; RCT, randomized clinical trial; Retro, retrospective; REU, reticulation, erythema, ulceration; SAFG, Submucosal autologous fat grafting; TCS, topical corticosteroids; TGA, anti-thyroglobulin autoantibody; TGF, transforming growth factor; TGPC, total glucosides of paeony capsules; TMA, anti-thyroid microsomal autoantibody; Tregs, regulatory T cells; UVA, ultraviolet A; VAS, visual analogue scale; WL, wavelength

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