Off Label Use of Biologics

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Inhibition of IL-12/IL-23 signaling reduces Alzheimer's disease-like pathology and cognitive decline.

Vom Berg J, et al.


Treatment of erythrodermic psoriasis in HCV+ patient with adalimumab.

Richetta AG, et al.

Infliximab, as sole or combined therapy, induces rapid clearing of erythrodermic psoriasis.
Takahashi MD, et al.

Life-threatening pustular and erythrodermic psoriasis responding to infliximab.
Lewis TG, et al.
Efficacy and safety of biologics in erythrodermic psoriasis: A multicentre, retrospective study.
Viguier M et al.

PASI 75:
- IFX: 48%
- ADA: 50%
- ETN: 40%
Efficacy of cyclosporine in the treatment of a case of infliximab-induced erythrodermic psoriasis.

Bruzzese V, Pepe J.


Wang TS, Tsai TF.

Ustekinumab induces rapid clearing of erythrodermic psoriasis after failure of antitumour necrosis factor therapies.
Santos-Juanes J, et al.

Sustained efficacy of ustekinumab in refractory erythrodermic psoriasis after failure of antitumor necrosis factor therapies.
Castiñeiras I, et al.
Infliximab for the treatment of severe pustular psoriasis.
Elewski BE.

Treatment of pustular psoriasis with infliximab.
Weishaupt C, et al.

Successful treatment of Von Zumbusch pustular psoriasis with infliximab.
Trent JT, Kerdel FA.
Recalcitrant pustular psoriasis successfully treated with adalimumab.

Alvarez AC, et al.

Etanercept in the treatment of generalized annular pustular psoriasis.


Ustekinumab: effective in a patient with severe recalcitrant generalized pustular psoriasis.

Daudén E, et al.

Occurrence of pustular psoriasis after treatment of Crohn disease with infliximab.

Pourciau C, Shwayder T.

Intralesional therapy for psoriasis.

Wang T-S, Tsai T-F.


Anecdotally, we have observed resolution of psoriatic lesions over injection sites of etanercept and adalimumab.
• Hidradenitis suppurativa
• Pyoderma gangrenosum
• Sarcoid
• Granuloma annulare
• Lichen planus
• Balanitis xerotica obliterans
• Toxic epidermal necrolysis
Infliximab for the treatment of hidradenitis suppurativa.

Lebwohl B, Sapadin AN.

A double-blind placebo-controlled randomized trial of adalimumab in the treatment of hidradenitis suppurativa.


• ↓ HS p. 6w.
• not a cure
Adalimumab for the treatment of moderate to severe hidradenitis suppurativa: A parallel randomized trial.

Kimball AB et al.


- Fewer than 70% achieve clearing or minimal disease.
The off-label treatment of severe hidradenitis suppurativa with TNF-α inhibitors: a systematic review.
van Rappard DC, et al.

- 65 studies involving 459 patients
- moderate to good response:
  - infliximab 82%
  - adalimumab 76%
  - etanercept 68%
Treatment of hidradenitis suppurative with tumour necrosis factor-α inhibitors.

Haslund P, et al.


- 34 publications, 105 patients
- Positive result 90/105
- 7 non-responsive, 8 adverse events
- Requires maintenance
Treatment of hidradenitis suppurativa with etanercept injection.

Adams DR, et al.

Observational case series on adalimumab-induced paradoxical hidradenitis suppurativa.

Delobeau M, et al
Experience with ustekinumab for the treatment of moderate to severe Hidradenitis suppurativa.

Gulliver WP, Jemec GB, Baker KA.  

• 1 pt → cleared
• 1 pt → 25-49% imp
• 1 pt → no imp
Improvement of Pyoderma gangrenosum and psoriasis associated with Crohn disease with anti-tumor necrosis factor alpha monoclonal antibody.


Successful treatment with infliximab of refractory pyoderma gangrenosum in 2 patients with inflammatory bowel diseases.
Cocco A et al.

Refractory and infected pyoderma gangrenosum in a patient with ulcerative colitis: response to infliximab.
De la Morena F et al.
Treatment of idiopathic pyoderma gangrenosum with infliximab: induction dosing regimen or on-demand therapy? Adișen E, Oztaș M, Gürer MA.


- Authors advocate a psoriasis dose schedule.
Adalimumab therapy for recalcitrant pyoderma gangrenosum.
Fonder MA et al. 

Adalimumab treatment for pyoderma gangrenosum.
Heffernan MP, Anadkat MJ, Smith DI. 

Successful Use of Adalimumab for Treating Pyoderma Gangrenosum with Ulcerative Colitis under Corticosteroid-tapering Conditions. 
Sagami S, et al
Treatment of pyoderma gangrenosum with the anti-TNFalpha drug - Etanercept.
Rogge FJ et al.

Successful Use of Etanercept in a Patient With Pyoderma Gangrenosum Complicating Rheumatoid Arthritis.
Disla E et al.
Interleukin 23 expression in pyoderma gangrenosum and targeted therapy with ustekinumab.

Guenova E, et al.

Arch Dermatol. 2011;147:1203-5.

- Ust. 45mg @ w. 0 thru 4 → clearing in 14 w.
- No relapse in 6 mos.
Toxic epidermal necrolysis-like acute cutaneous lupus erythematosus successfully treated with a single dose of etanercept: report of three cases.

Napolitano M, et al.

Etanercept therapy for toxic epidermal necrolysis.

Paradisi A, et al.


- 10 patients
- Single 50mg dose
- Median time to healing was 8.5 days
Adalimumab for the treatment of pityriasis rubra pilaris: a case report.
Wassef C et al.

Pityriasis rubra pilaris with polyarthritis treated with adalimumab.
Chiu HY, Tsai TF.
Refractory chronic cutaneous sarcoidosis responsive to dose escalation of TNF-alpha antagonists.

• High dose etanercept less effective than infliximab or adalimumab
A systematic review of the off-label use of biological therapies in systemic autoimmune diseases.


- Sarcoid (n=219), IFX→99% improve
- Still disease (n=118), IFX→90%
- Behcet disease (n=173), ETN → 96%
Adalimumab successful in sarcoidosis patients with refractory chronic non-infectious uveitis.

Erckens RJ, et al.


↑ Mean vital capacity
Sarcoidosis as an adverse effect of tumor necrosis factor inhibitors.
Cathcart S, et al.

Club Rhumatismes et Inflammation (CRI). Sarcoid-like granulomatosis in patients treated with tumor necrosis factor blockers: 10 cases.
Daïen CI, et al.
Cutaneous sarcoidosis in a patient with ulcerative colitis on infliximab.
Fok KC, et al.

Pulmonary sarcoidosis in a patient with psoriatic arthritis during infliximab therapy.
Izzi S, et al.
Cutaneous sarcoidosis occurring during anti-TNF-alpha treatment: report of two cases.
Dhaille F, et al.

Development of sarcoidosis following etanercept treatment: a report of three cases.
Skoie IM, et al.

Etanercept-induced cutaneous and pulmonary sarcoid-like granulomas resolving with adalimumab.
Burns AM, et al.
Etanercept-induced cutaneous and pulmonary sarcoid-like granulomas resolving with adalimumab.

Burns AM, et al.


Treatment of widespread granuloma annulare with adalimumab: a case report.
Kozic H, Webster GF.

Generalized interstitial granuloma annulare-response to adalimumab.
Werchau S, et al.
Resolving granuloma annulare with etanercept.

Shupack J, Siu K.

Failure of etanercept therapy in disseminated granuloma annulare.

Kreuter A, et al.

*Arch Dermatol.* 2006;142:1236-7; author reply 1237.
Disseminated granuloma annulare: a cutaneous adverse effect of anti-tnf agents.
Ratnarathorn M, et al.

Granuloma annulare induced by anti-tumour necrosis factor therapy.
Voulgari PV, et al.

Treatment of recalcitrant granuloma annulare (GA) with adalimumab: A single-center, observational study.
Min MS, Lebwohl M.
Intralesional adalimumab for the treatment of refractory balanitis xerotica obliterans.

Lowenstein EB, et al.

Successful Outcome of Recalcitrant Balanitis Xerotica Obliterans with Adalimumab: Analysis of Long-term Follow-up of Man with Long-standing History of Disease

Jessica L. Feig PhD, Michael Gribetz MD, Mark Lebwohl MD

Intralesional infliximab in noninfectious cutaneous granulomas: three cases of necrobiosis lipoidica.

Barde C, et al.

*Dermatology*. 2011;222:212-6.
Treatment of severe refractory adult atopic dermatitis with ustekinumab.

Puya R, et al.


Treatment of severe, recalcitrant, major aphthous stomatitis with adalimumab.

Efficacy of tumour necrosis factor-α antagonists in aphthous ulceration: review of published individual patient data.

Off-label use of biologicals in the management of inflammatory oral mucosal disease.
A systematic review of the off-label use of biological therapies in systemic autoimmune diseases.
Ramos-Casals M, et al.

- Sarcoid (n=219), IFX→99% improve
- Still disease (n=118), IFX→90%
- Behcet disease (n=173), ETN → 96%
Anti-TNF agents for Behçet's disease: analysis of published data on 369 patients. 
Arida A, et al. 

Efficacy of anti-TNF alpha in severe and/or refractory Behçet's disease: Multicenter study of 124 patients. 
Vallet H, et al
Alopecia areata universalis during off-label treatment with infliximab in a patient with Behçet disease.

Beccastrini E, et al.

*Dermatol Online J.* 2010;16:15.
Tumour necrosis factor-α inhibition can stabilize disease in progressive vitiligo.

Webb KC(1), Tung R(1), Winterfield LS(1), Gottlieb AB(2), Eby JM(3), Henning SW(3), Le Poole IC(4).
Development of Vitiligo during Treatment with Adalimumab: A Plausible or Paradoxical Response?
Jung JM, et al
Occurrence of vitiligo in a patient with ankylosing spondylitis receiving adalimumab.
Toussirot E, et al
Deterioration of vitiligo and new onset of halo naevi observed in two patients receiving adalimumab.
Maruthappu T, et al
Vitiligo during Treatment of Crohn's Disease with Adalimumab: Adverse Effect or Co-Occurrence?
Posada C, et al
Vitiligo after the resolution of psoriatic plaques during treatment with adalimumab.
Smith DI, Heffernan MP.

Multicentric reticulohistiocytosis successfully treated with infliximab: an illustrative case and evaluation of cytokine expression supporting anti-tumor necrosis factor therapy.
Kalajian AH, Callen JP.

Multicentric reticulohistiocytosis responding to tumor necrosis factor-alpha inhibition in a renal transplant patient.
Shannon SE, et al.

Multicentric reticulohistiocytosis associated arthritis responding to anti-TNF and methotrexate.
De Knop KJ, et al.

*J Eur Acad Dermatol Venereol.* 2012 Feb 10.[Epub ahead of print]


Successful treatment for conventional treatment-resistant dermatomyositis-associated interstitial lung disease with adalimumab.

Effectiveness of infliximab in the treatment of refractory juvenile dermatomyositis with calcinosis.

Long-term safety and effectiveness of tumour necrosis factor inhibitors in systemic sclerosis patients with inflammatory arthritis.

Omair MA, et al.

Morphea associated with the use of adalimumab: a case report and review of the literature.

Ramírez J, et al.

Adalimumab in the management of cutaneous and oral lichen planus.

Chao TJ.


Asarch A, et al.


Successful therapy of sacroiliitis in SAPHO syndrome by etanercept.
Wolber C, et al.

Long-term treatment of severe SAPHO syndrome with adalimumab: case report and a review of the literature.
Garcovich S, et al.

Ilium osteitis as the main manifestation of the SAPHO syndrome: response to infliximab therapy and review of the literature.
Moll C, et al.
In SAPHO syndrome anti-TNF-alpha therapy may induce persistent amelioration of osteoarticular complaints, but may exacerbate cutaneous manifestations.

Massara A, et al.

*Rheumatology (Oxford).* 2006;45:730-3.
Refractory dissecting Cellulitis of the Scalp Successfully controlled with Adalimumab.
Refractory Subcutaneous Sweet Syndrome Treated With Adalimumab.
JAMA Dermatol. 2016; [Epub ahead of print]
Agarwal A, Barrow W, Selim MA, Nicholas MW

Occurrence of Sweet syndrome under anti-TNF.
Banse C, et al
Cutaneous Crohn's disease successfully treated with adalimumab.

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Stingeni L, Neve D, Bassotti G, Simonetti S, Bianchi L, Hansel K.