Autoimmune diseases

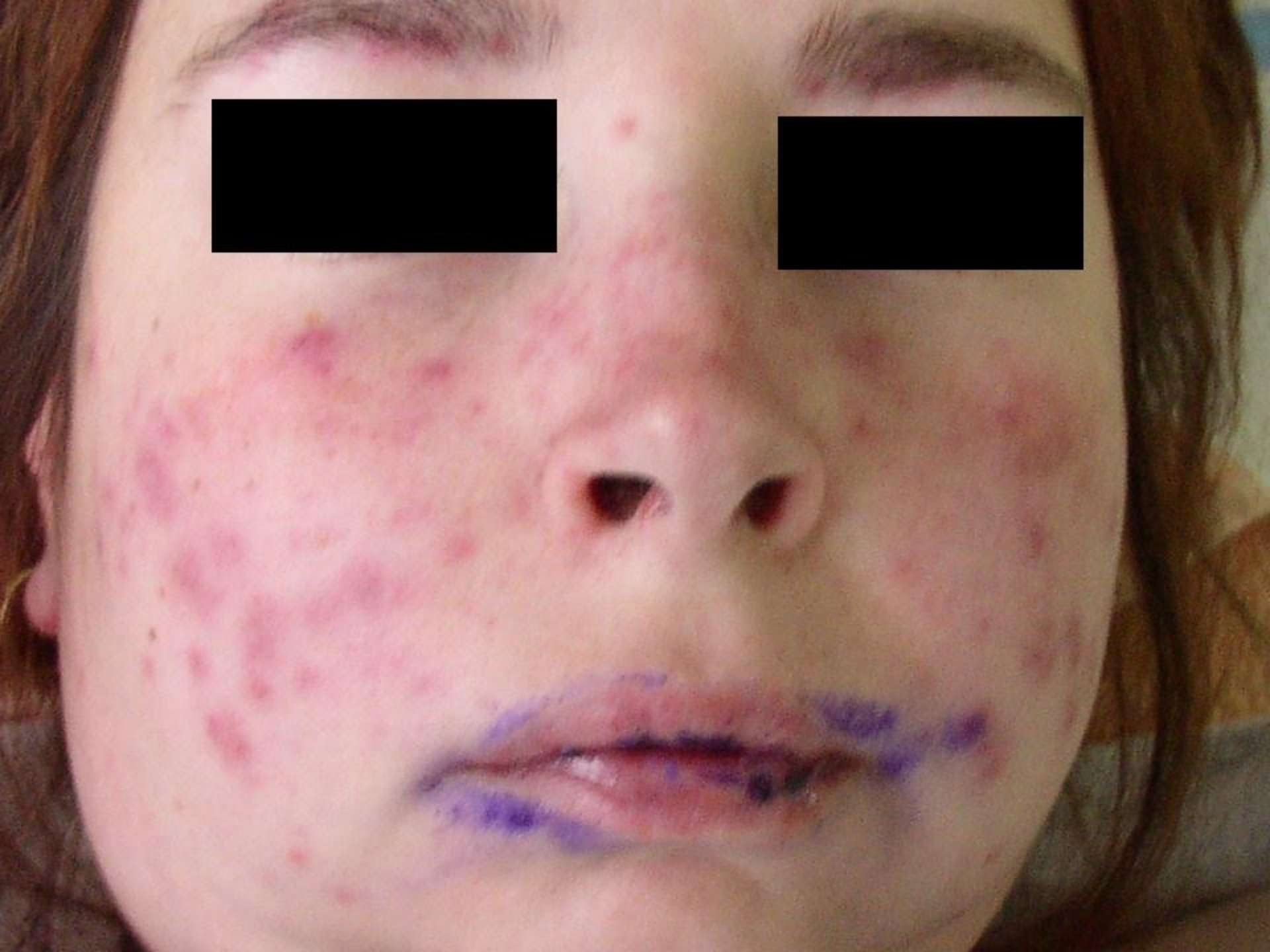
- SLE
- Dermatomyositis/polymyositis
- Systemic sclerosis
- Vasculitis
- Sjogren syndrom

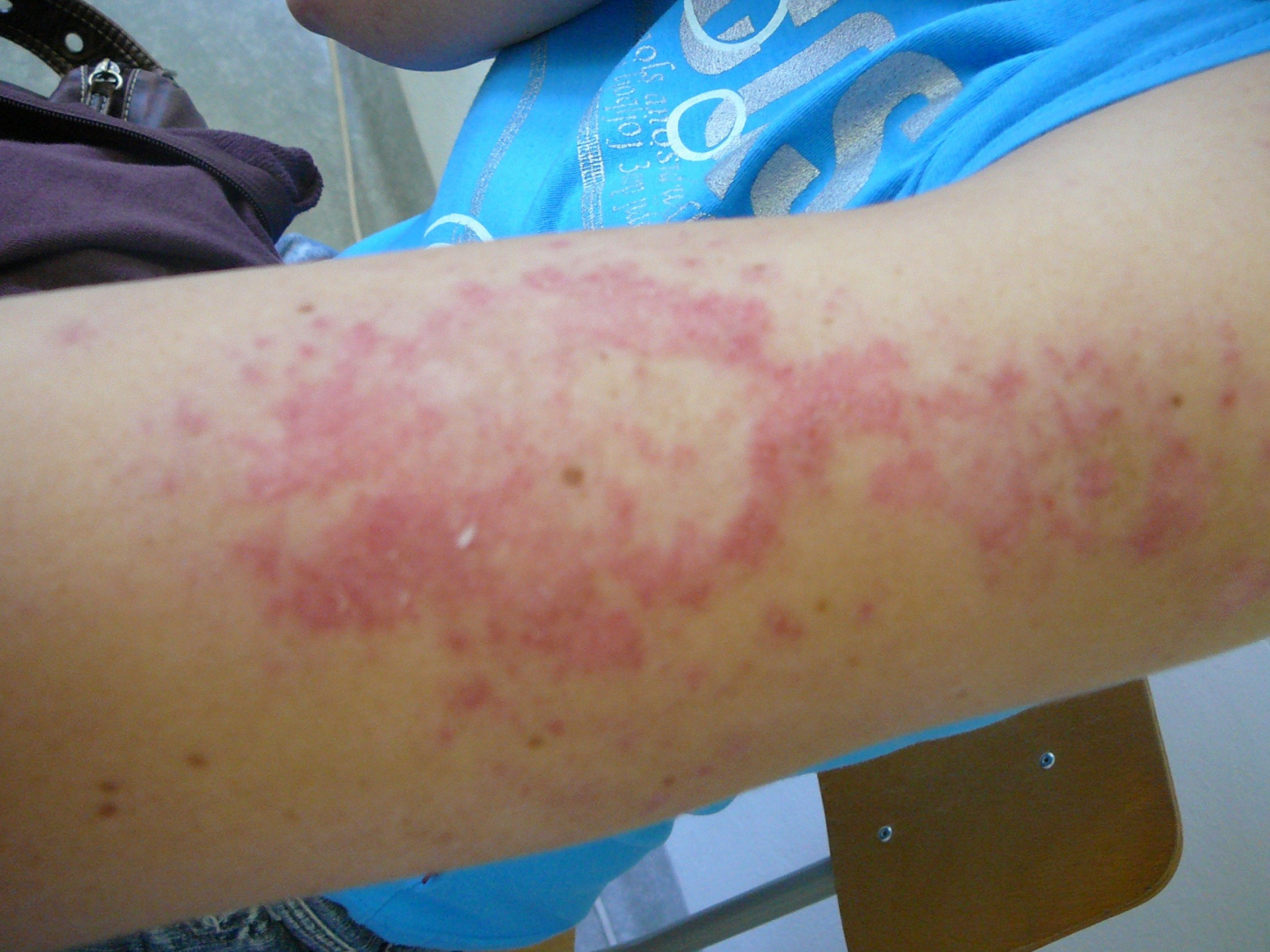
SLE classification criteria

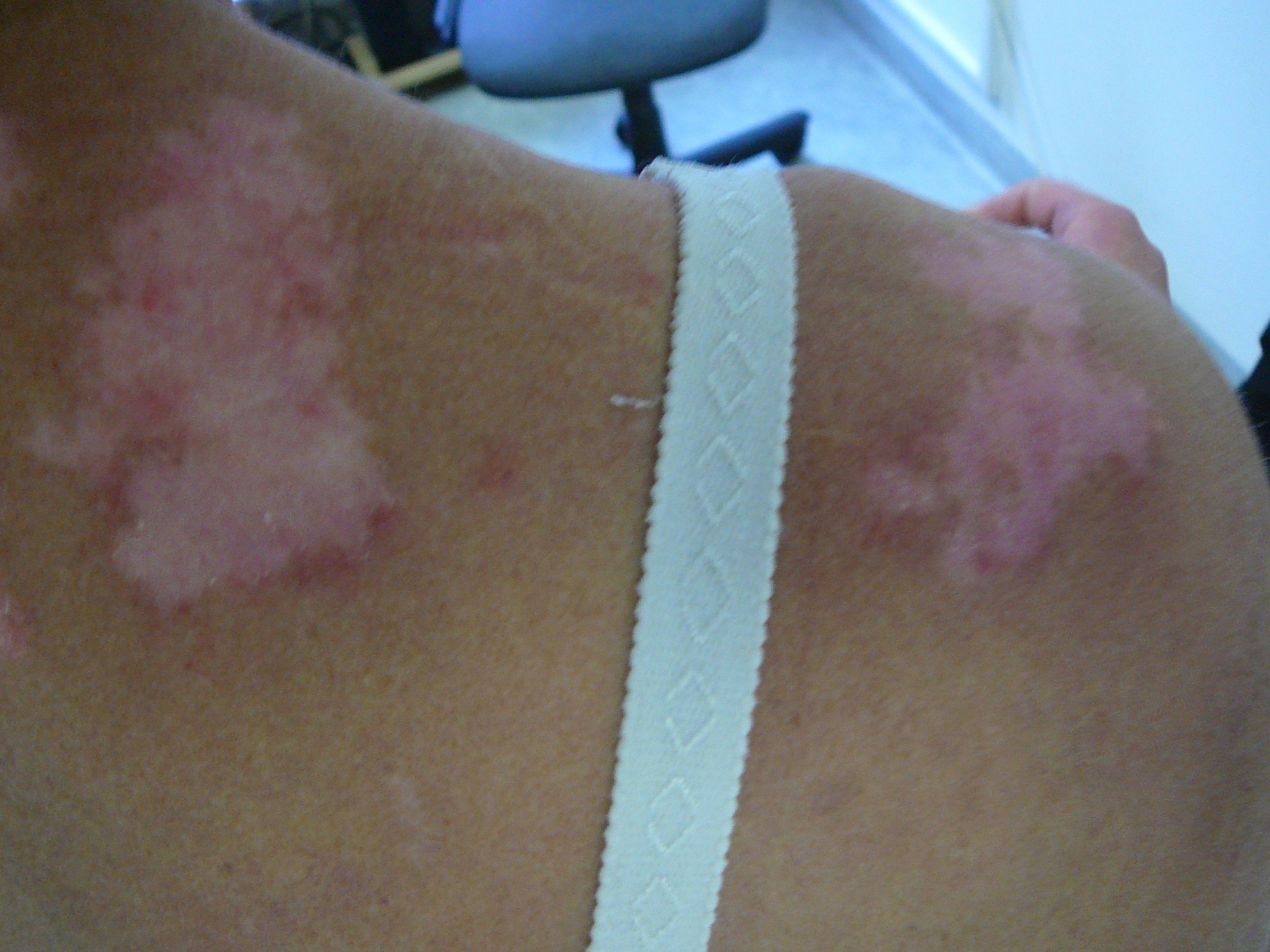
ACR 97 criteria for SLE
Malar rash
Discoid rash
Photosensitivity
Oral ulcers
Arthritis
Serositis
Renal disorder
Neurologic disorder
Haematologic disorder
Immunologic disorder
Antinuclear antibodies (ANA)
Requirement: ≥4 criteria

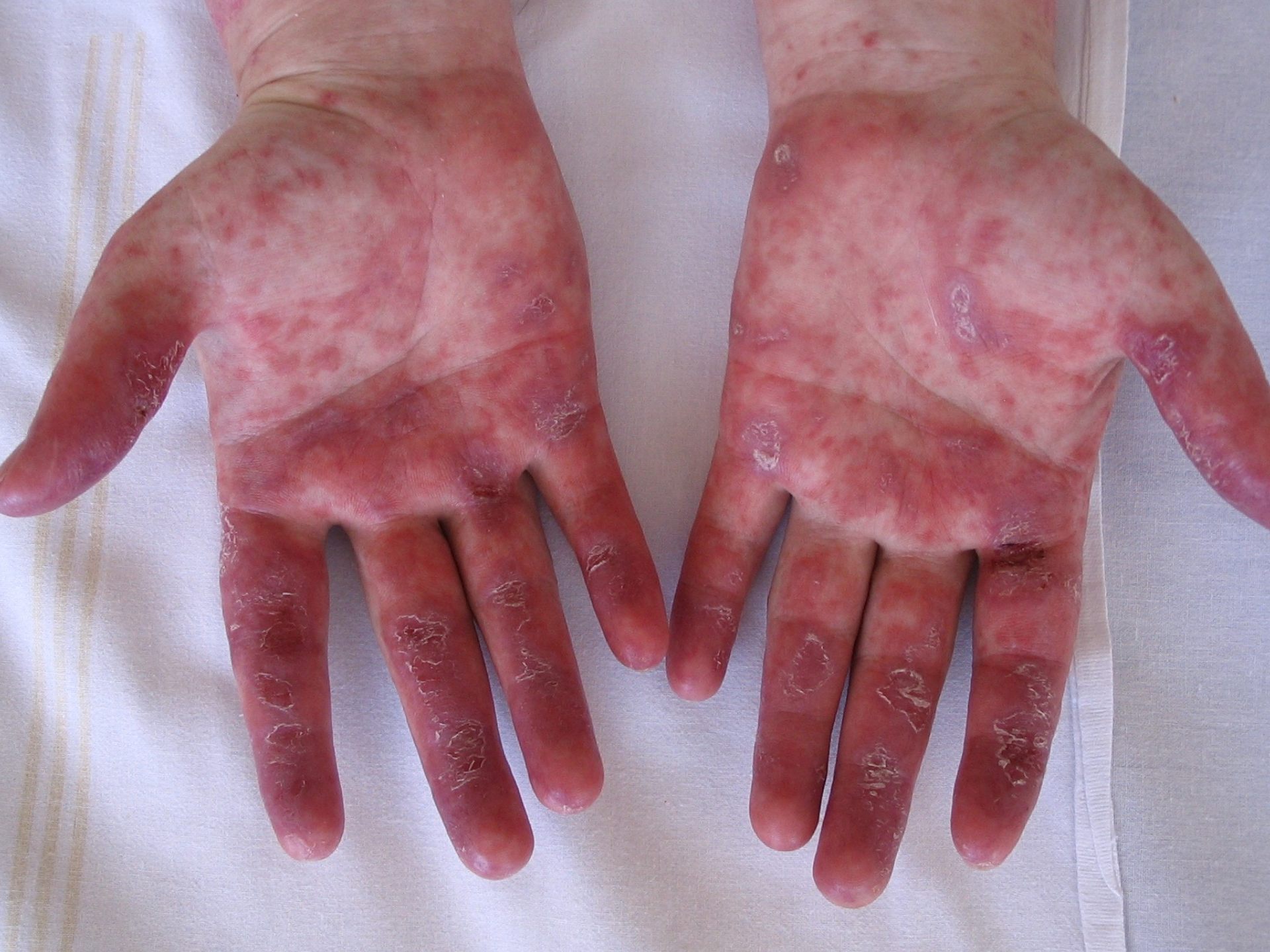
SLICC 2012 Classification criteria for SLE	
Clinical criteria	Immunologic criteria
Acute cutaneous lupus	ANA
Chronic cutaneous lupus	Anti-dsDNA
Oral or nasal ulcers	Anti-Sm
Non scarring alopecia	Antiphospholipid antibody
Arthritis	Low complement
Serositis	Direct Coombs test
Renal	
Neurological	
Haemolytic anaemia	
Leukopenia	
Thombocytopania	
Requirement: ≥4 criteria (at least 1 clinical & 1 laboratory criteria) OR biopsy proven lupus nephritis with a positive ANA or anti-dsDNA	

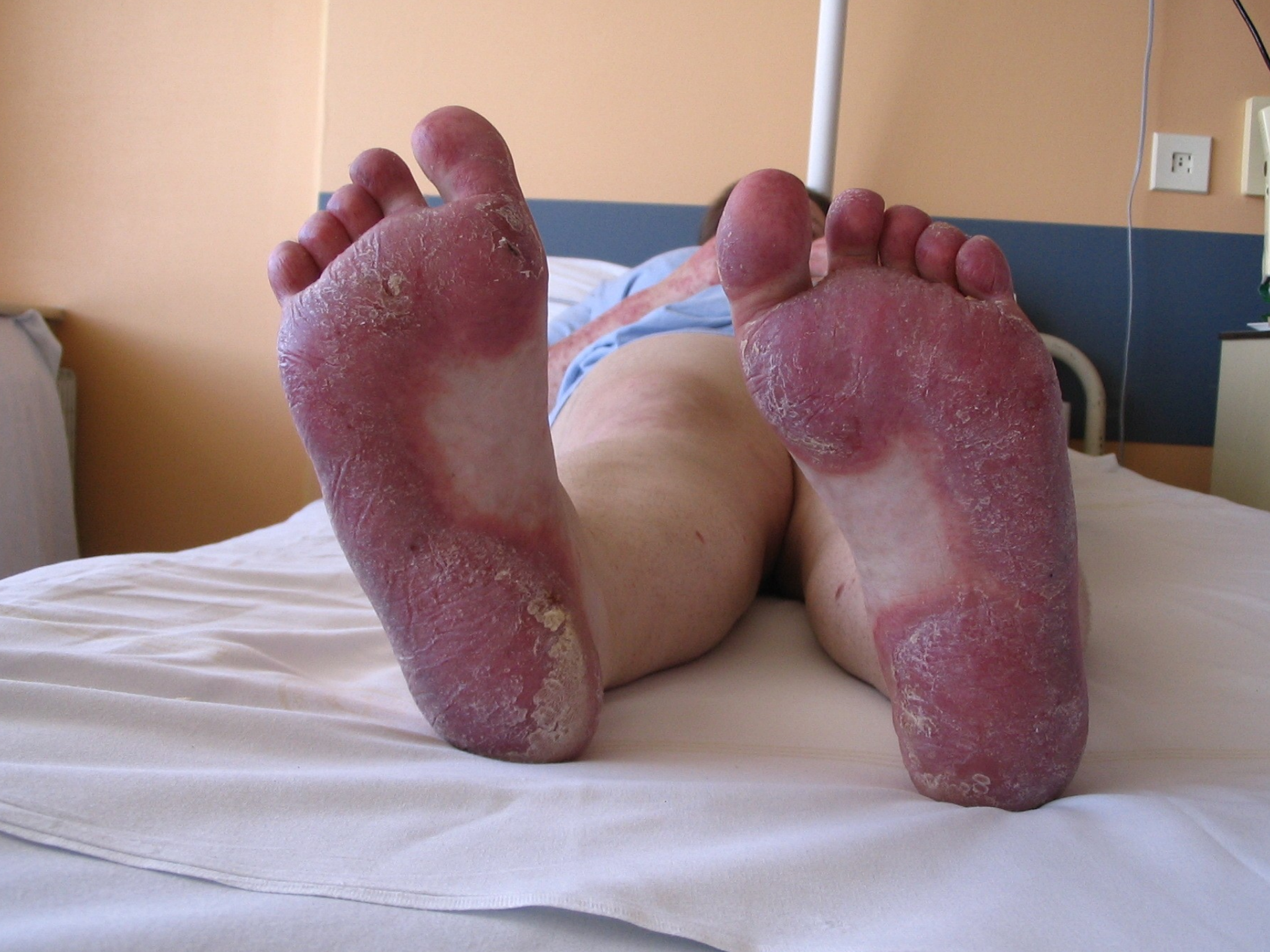
EULAR/ACR 2019 SLE Classification Criteria			
Clinical domains		Immunologic domains	
Constitutional domain		***APS antibody domain***	
Fever	2	Anticardiolipin IgG > 40 GPL OR Anti-beta2GP1 IgG > 40 units OR Lupus anticoagulant	2
Cutaneous domain		***Complement protein domain***	
Non-scarring alopecia	2	Low C3 or low C4	3
Oral ulcers	2	Low C3 and low C4	4
Subacute cutaneous /discoid	4		
Acute cutaneous lupus	6		
Arthritis domain		***Highly specific antibodies domain***	
Synovitis or tenderness in at least 2 joints	6	Anti-dsDNA antibody	6
		Anti-Sm antibody	6
Neurological domain		**Requirement:**	
Delirium	2	• **All patients classified as having SLE must have ANA ≥ 1:80**	
Psychosis	3	• **Patients must have ≥ 10 points for classification**	
Seizure	5	• **Only the highest criterion in a given domain counts**	
Serositis domain		• **SLE classification requires points ≥1 clinical domain**	
Pleural or pericardial effusion	5		
Acute pericarditis	6		
Haematologic domain			
Leukopenia	3		
Thrombocytopenia	4		
Autoimmune haemolysis	4		
Renal domain			
Proteinuria >0.5g/ 24 hours	4		
Class II or V lupus nephritis	8		
Class III or IV lupus nephritis	10		

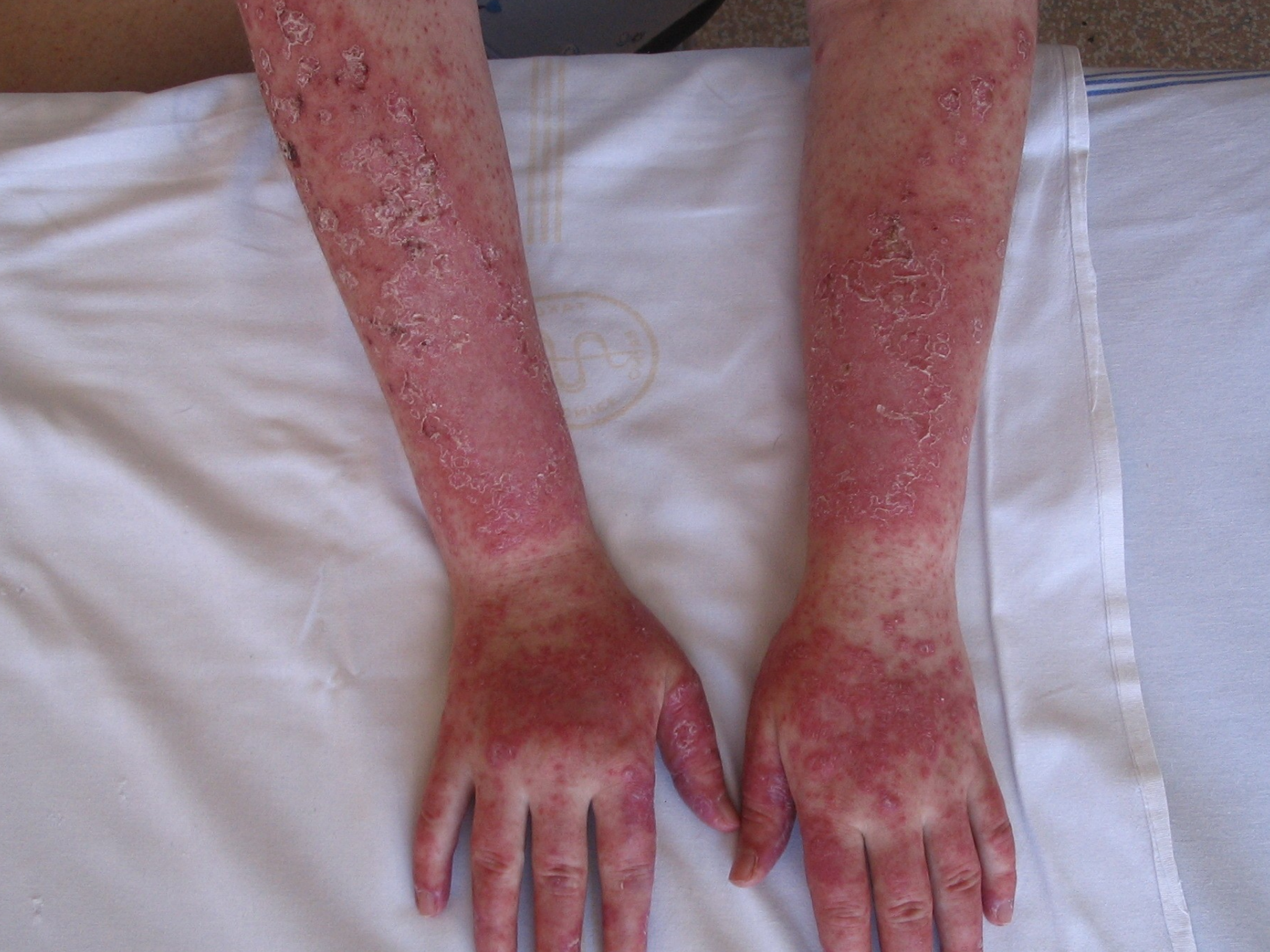


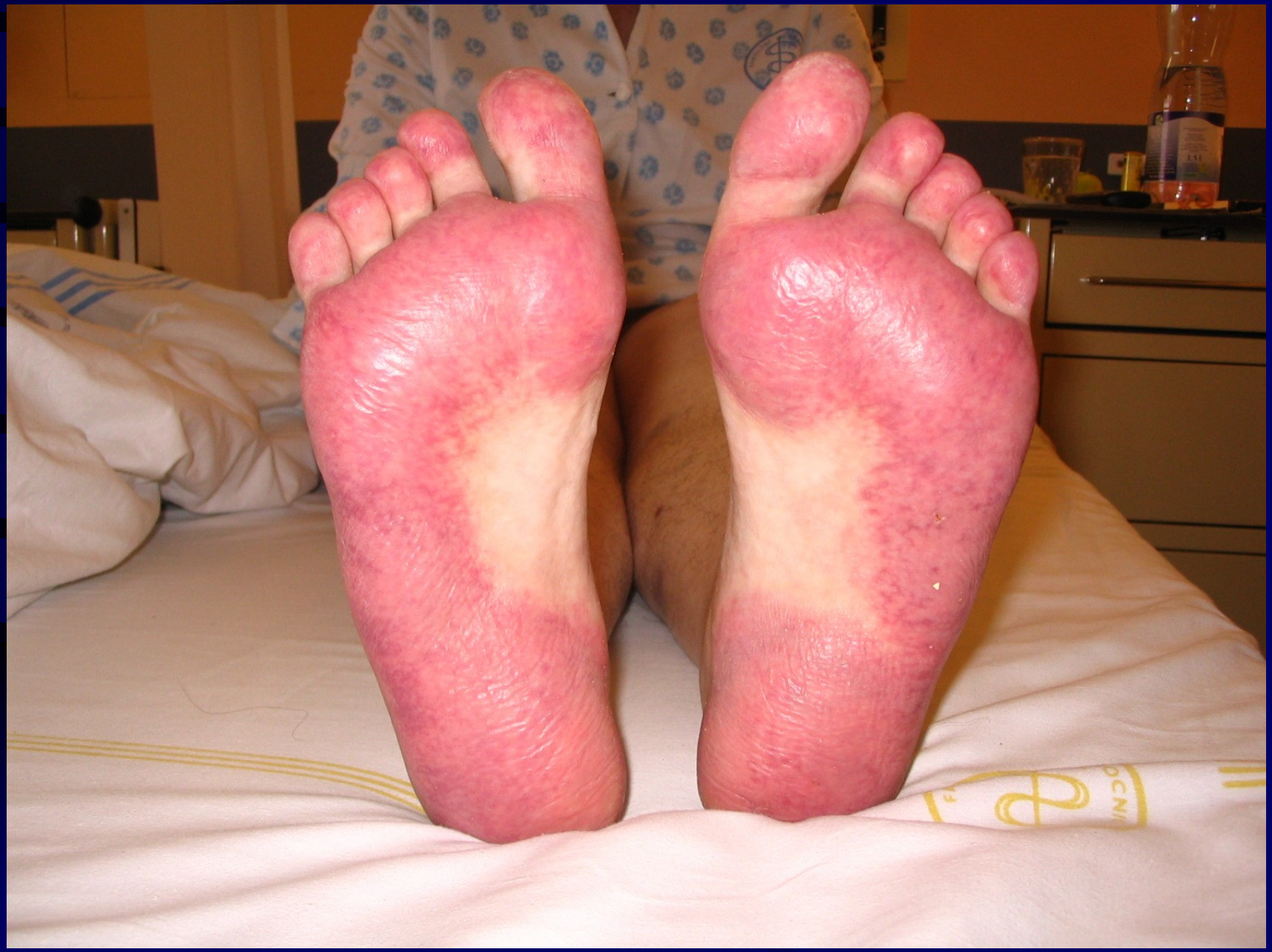


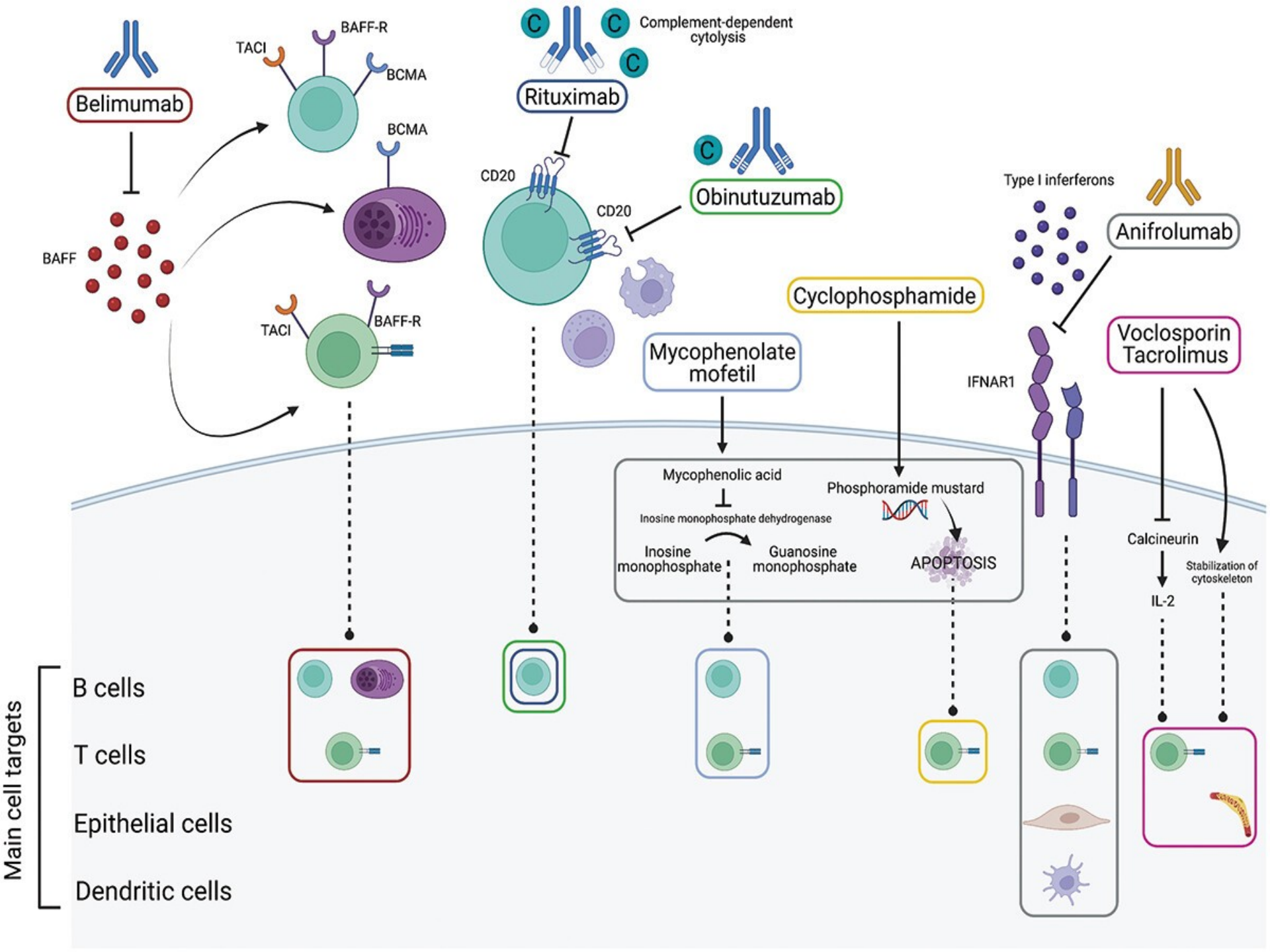






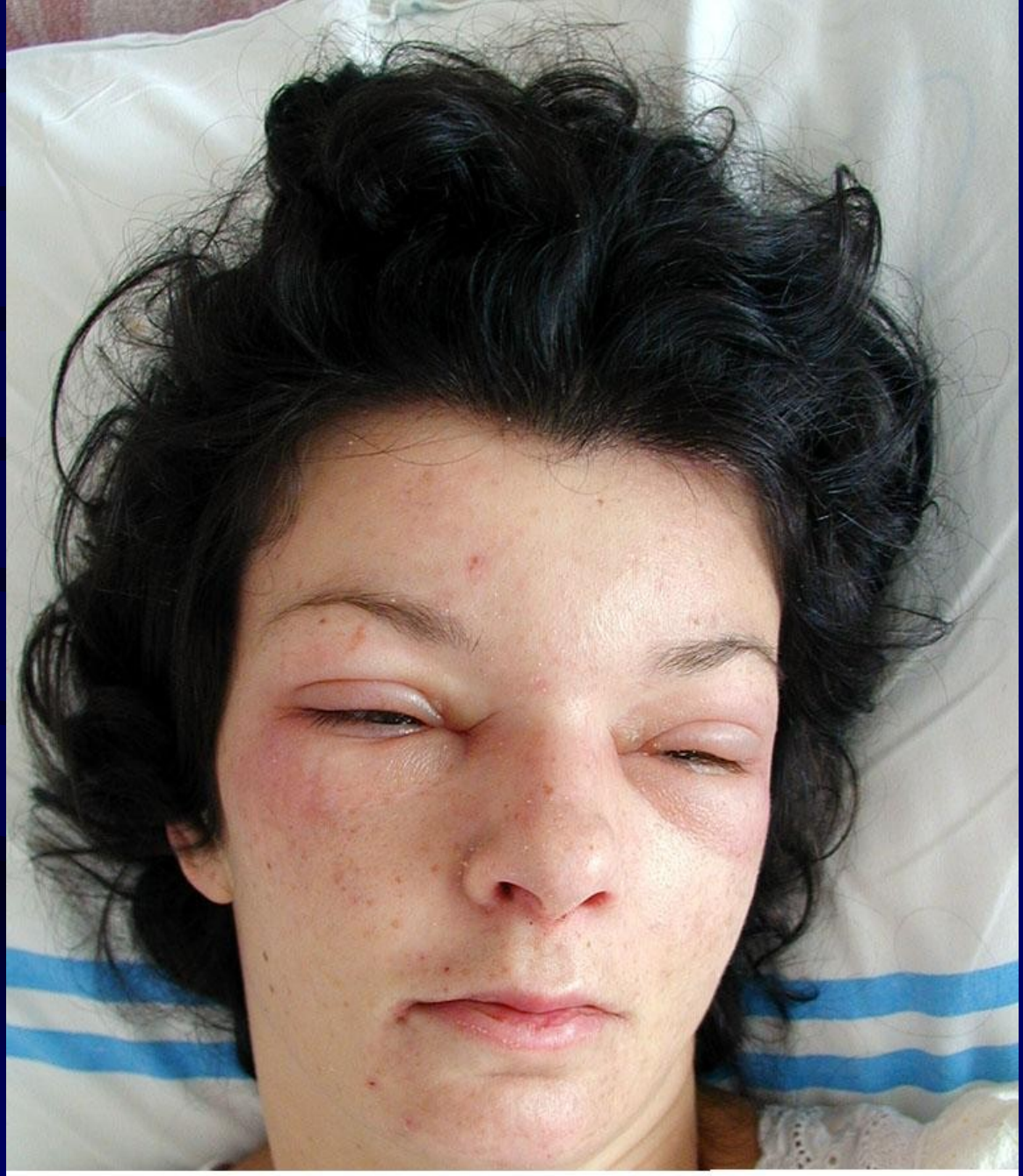


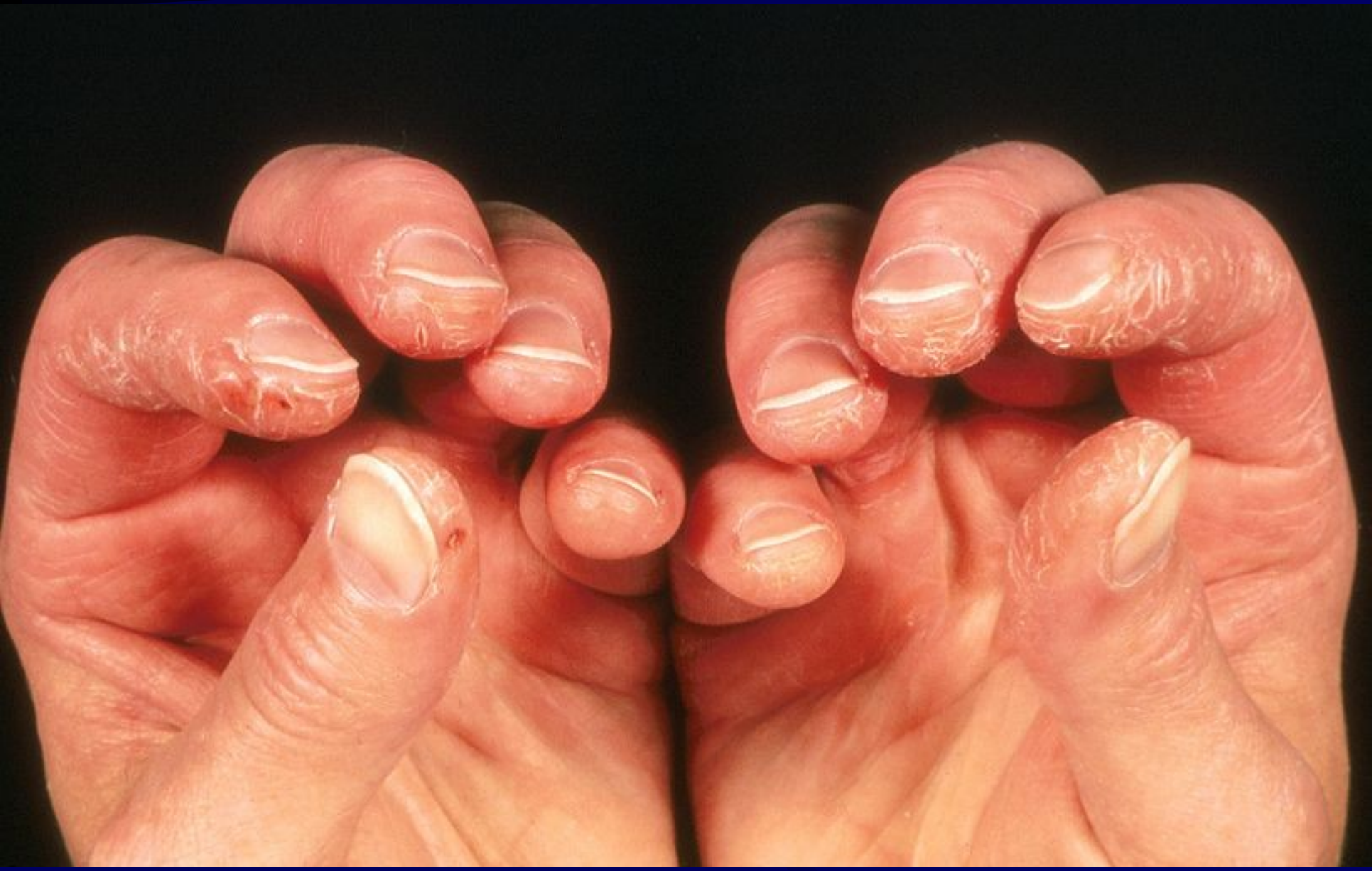



Belimumab
BAFF
BAFF-R
TACI
BCMA
BCMA
TACI
BAFF-R
Rituximab
Complement-dependent cytolysis
CD20
CD20
Obinutuzumab
Cyclophosphamide
Mycophenolate mofetil
Mycophenolic acid
Inosine monophosphate dehydrogenase
Inosine monophosphate
Guanosine monophosphate
Phosphoramide mustard
APOPTOSIS
Type I inferferons
Anifrolumab
IFNAR1
Voclosporin
Tacrolimus
Calcineurin
IL-2
Stabilization of cytoskeleton
Main cell targets
B cells
T cells
Epithelial cells
Dendritic cells

Dermatomyositis/polymyositis

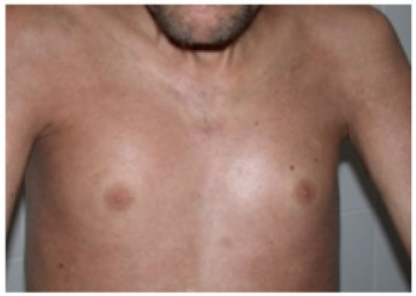
- Proximal muscle weakness
- AST, ALT, myoglobin, CK above normal level
- Positivity of EMG
- Histologic findings of inflammation in muscles
- Skin changes



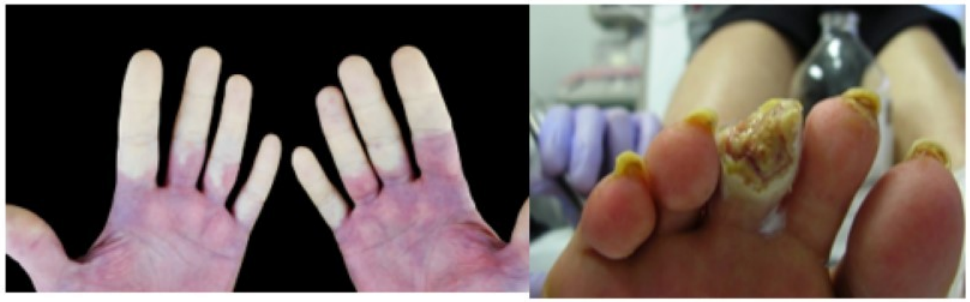


Definition of SSc

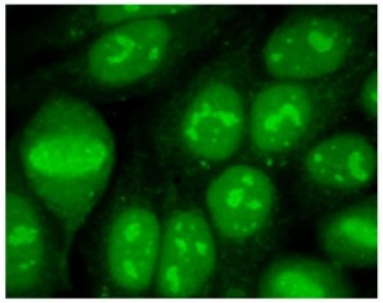
Rare connective tissue disease characterized by[a]



Fibrosis



Generalized vasculopathy



Autoimmunity[b,c]

Antinuclear antibodies (ANA): 90%

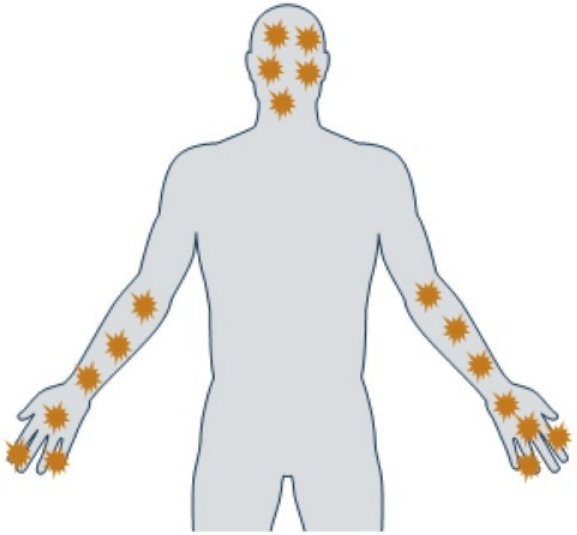
SSc- specific antibodies:

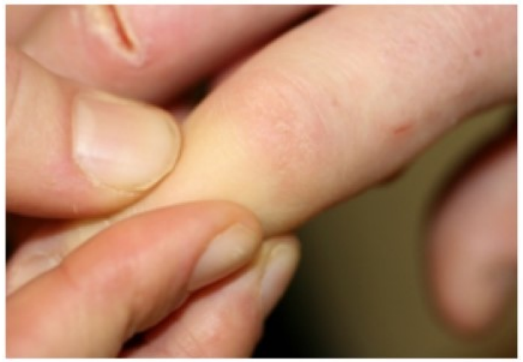
- Anti-centromere
- Anti-topoisomerase I (scl-70)
- Anti-RNA polymerase
- Anti Th/To
- Anti-fibrillarin

a. Coral-Alvarado PX, et al. *Autoimmunity: From Bench to Bedside*. 2013. b. Bonroy C, et al. *J Immunol Methods.* 2012;379:53-60; c. Günther J, et al. *Semin Immunopathol.* 2015;37:529-542. Images courtesy of Vanessa Smith, MD, PhD.

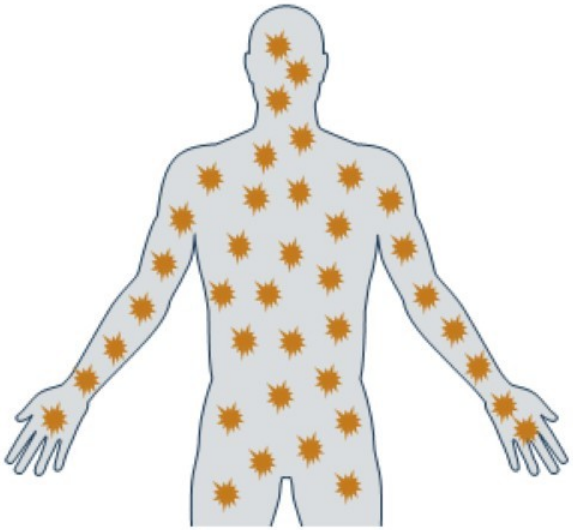
Major Subsets of SSc

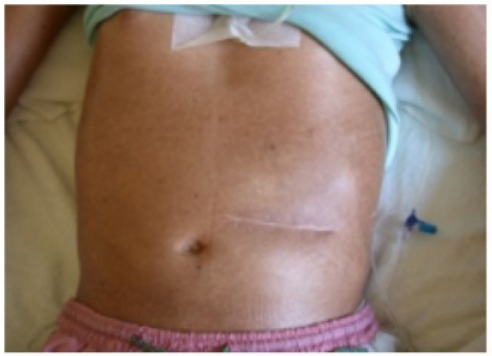
Limited Cutaneous (LcSSc)





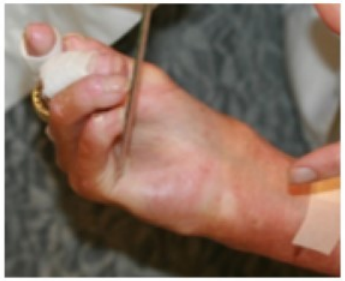
Diffuse Cutaneous (DcSSc)

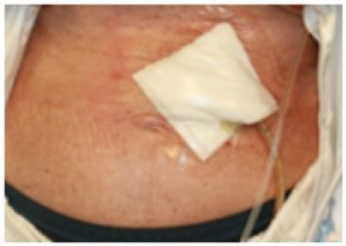


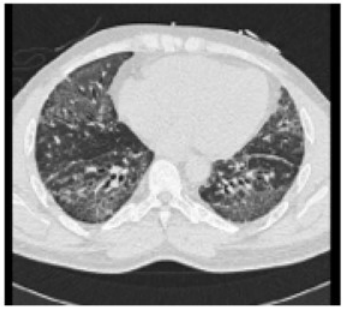


LeRoy EC, et al. *J Rheumatol.* 2001;28:1573-1576. Images courtesy of Vanessa Smith, MD, PhD.

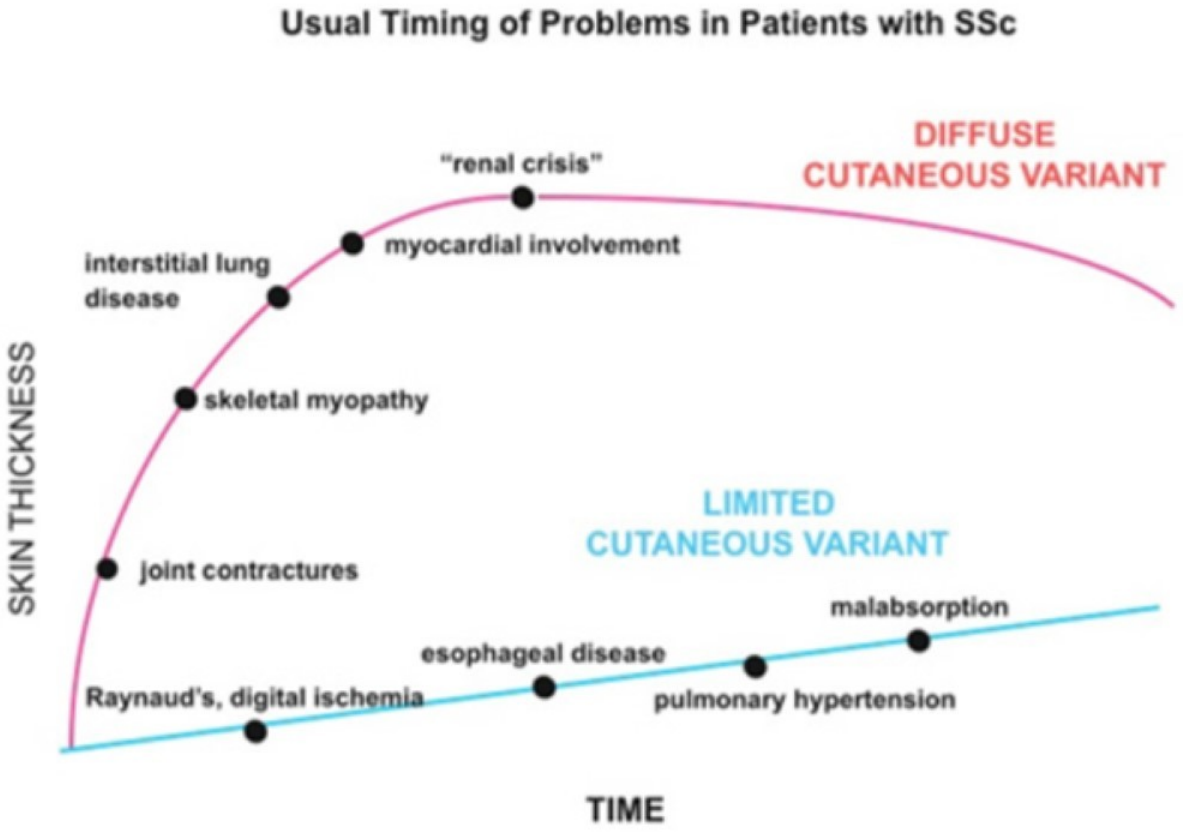
Timing of Complications





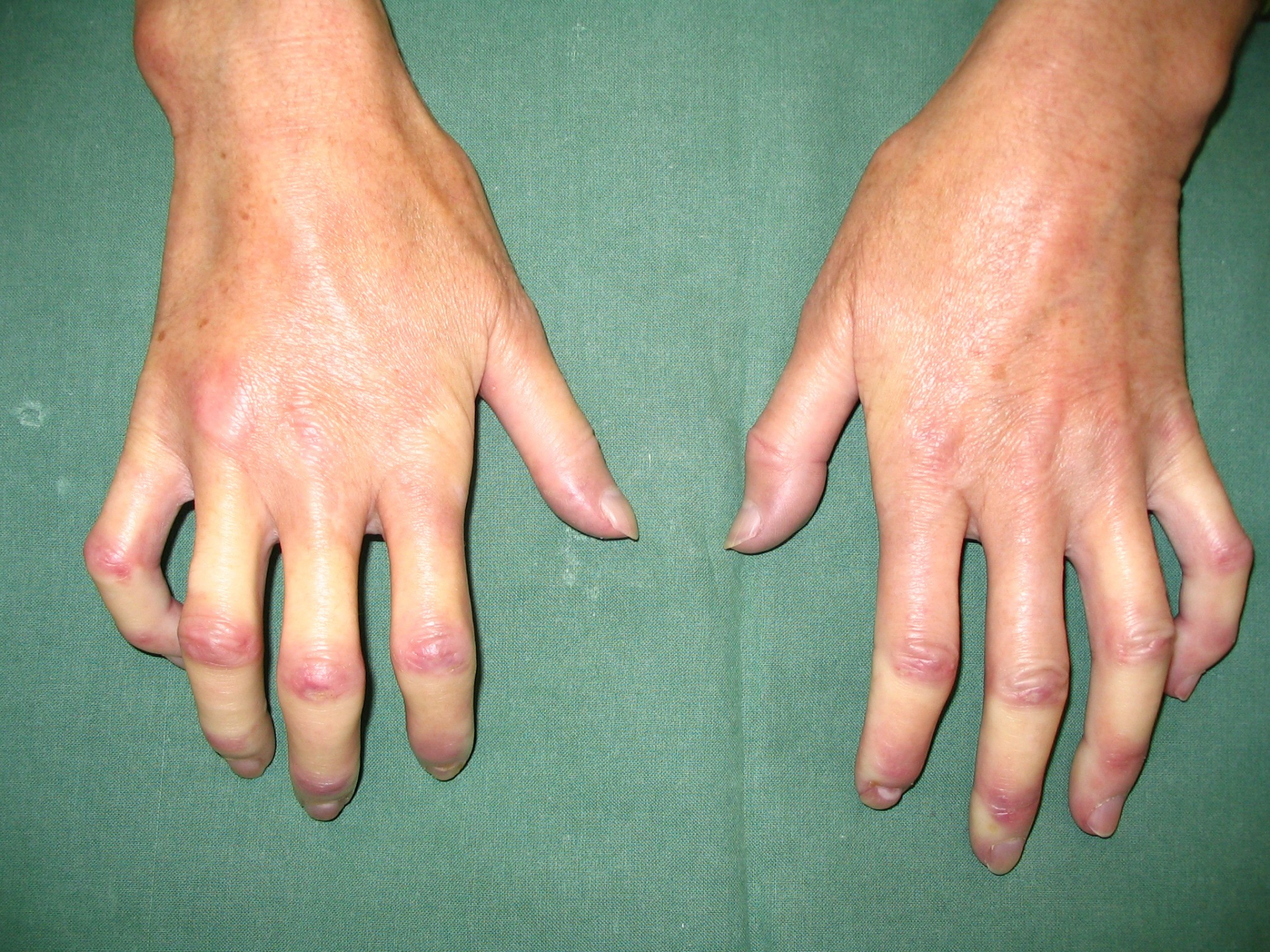


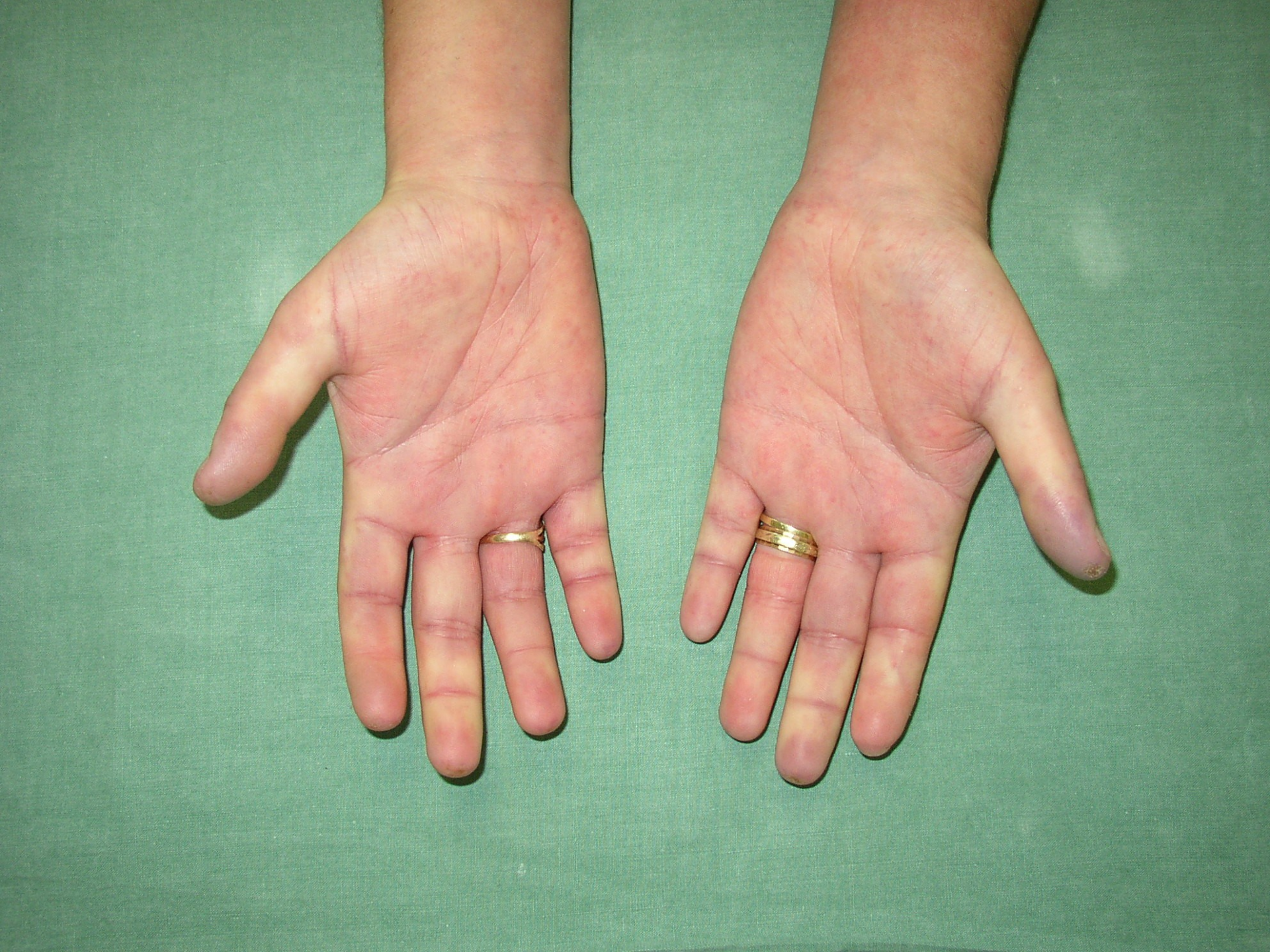
Images courtesy of
Vanessa Smith, MD, PhD.

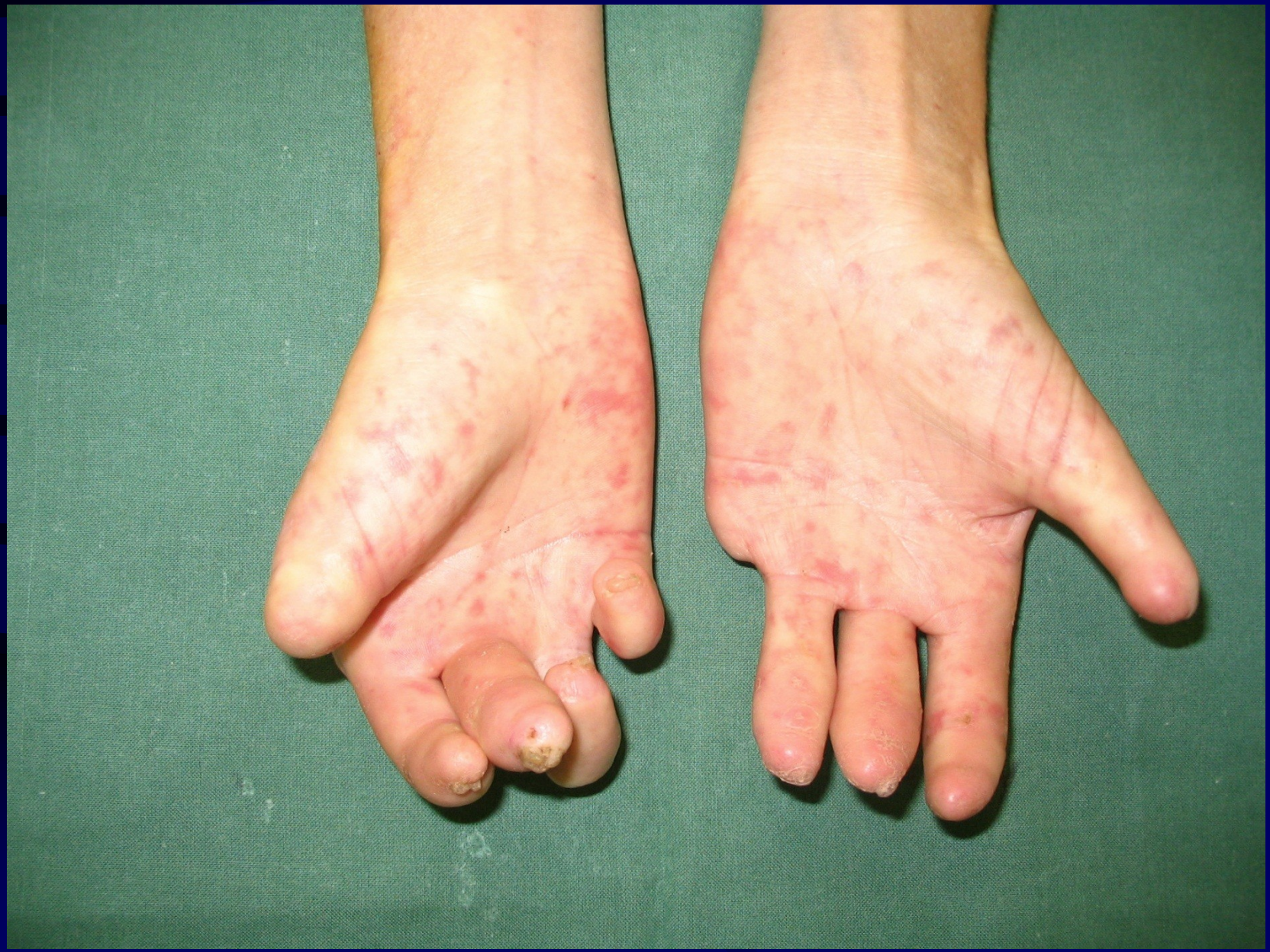


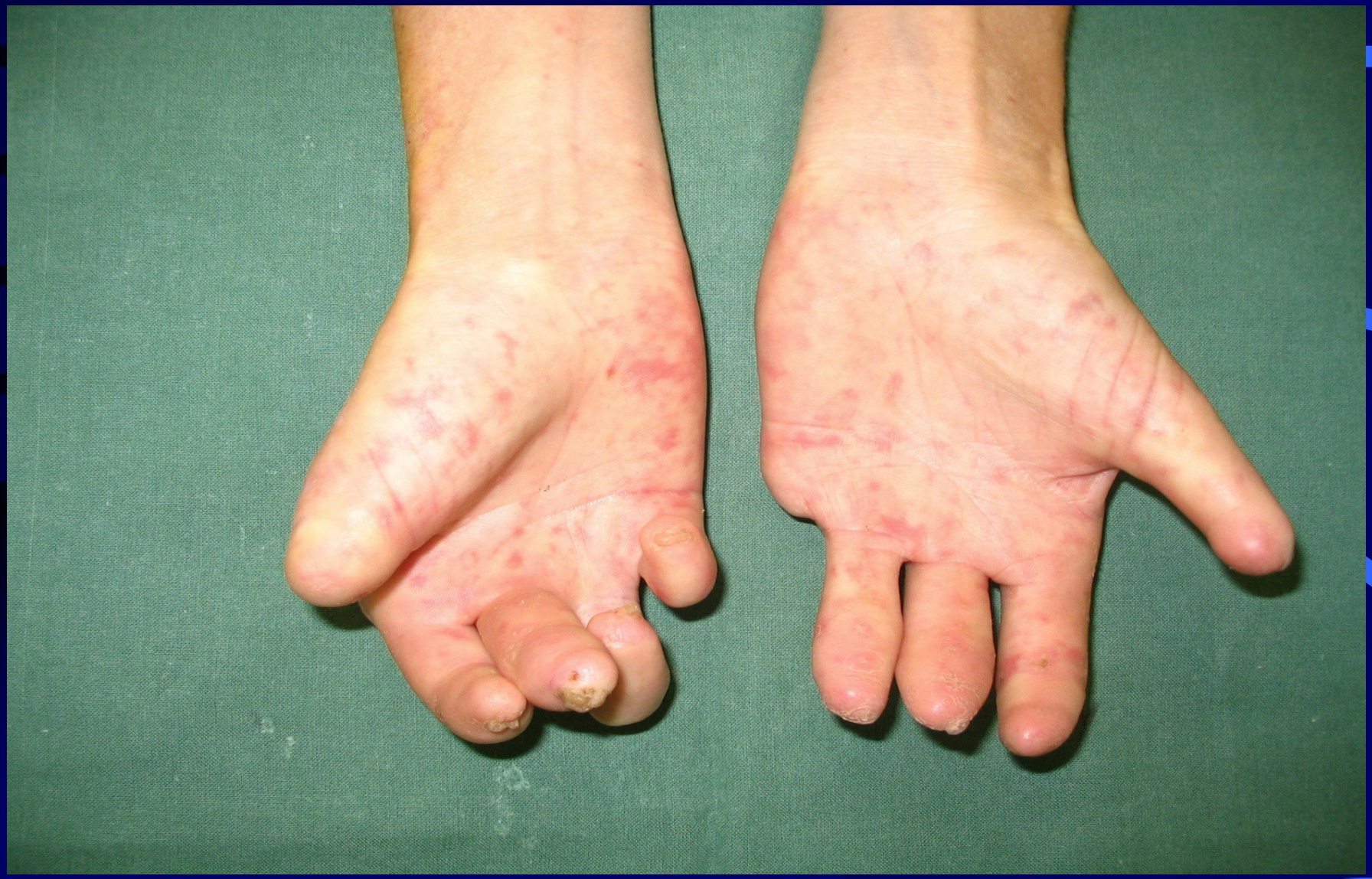
Medsger TA. Round 30: Selected Topics in Systemic Sclerosis, July 9, 2010. Reprinted with permission by the author.

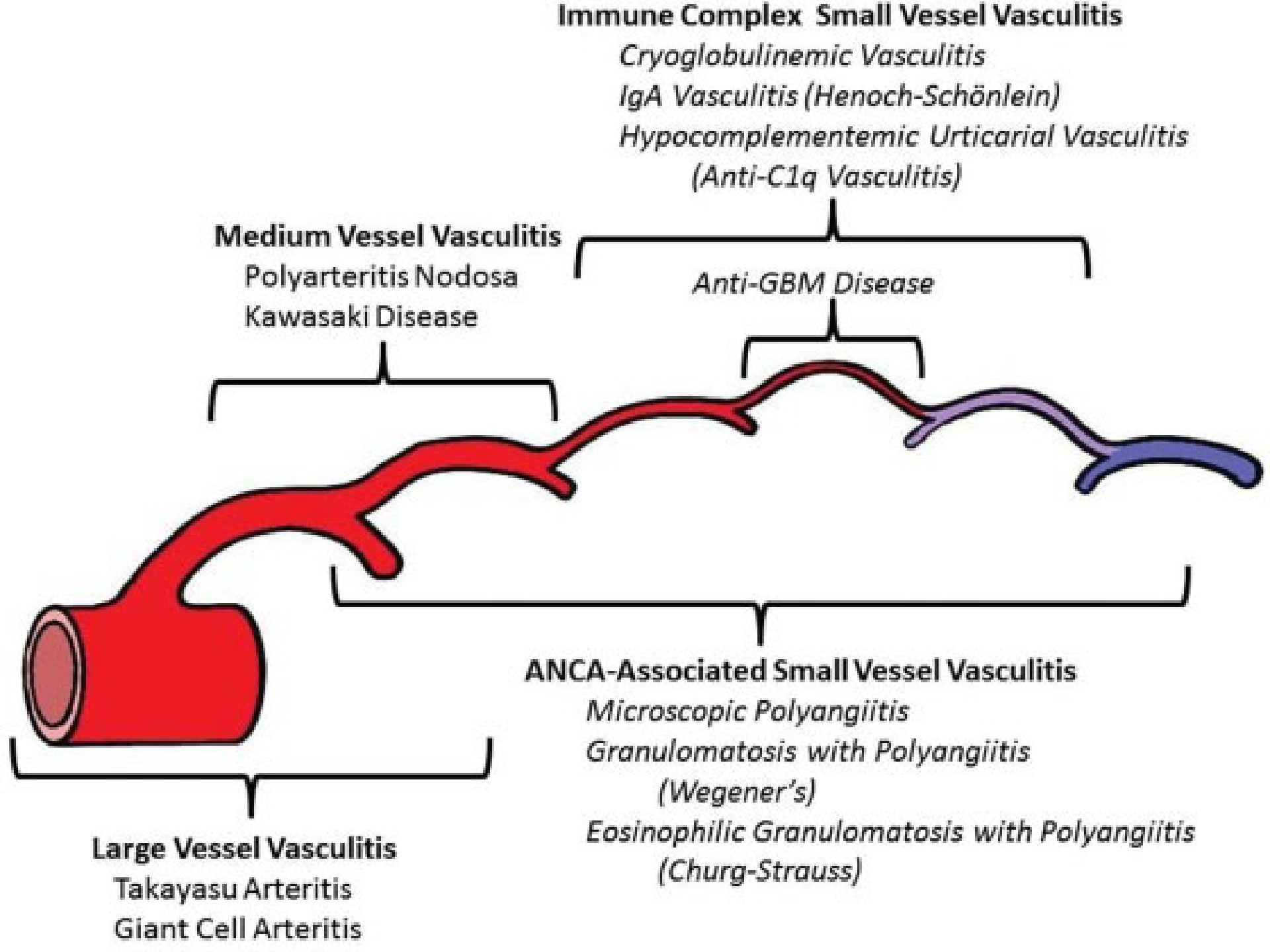
Severe organ involvement in DcSSc occurs early in the disease evolution










Immune Complex Small Vessel Vasculitis
Cryoglobulinemic Vasculitis
IgA Vasculitis (Henoch-Schönlein)
Hypocomplementemic Urticarial Vasculitis
(Anti-C1q Vasculitis)
Medium Vessel Vasculitis
Polyarteritis Nodosa
Kawasaki Disease
Anti-GBM Disease
ANCA-Associated Small Vessel Vasculitis
Microscopic Polyangiitis
Granulomatosis with Polyangiitis
(Wegener's)
Eosinophilic Granulomatosis with Polyangiitis
(Churg-Strauss)
Large Vessel Vasculitis
Takayasu Arteritis
Giant Cell Arteritis

ANCA AAV: Epidemiologic Data

Annual incidence:

3.3 cases per 100,000 adults in the United States[a]

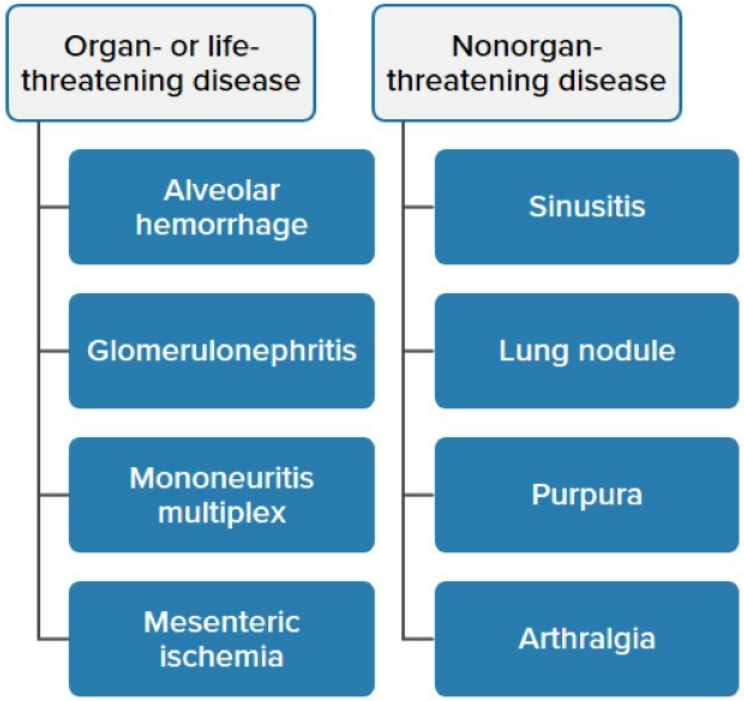
80% to 90% present with an organ-threatening manifestation[b]

Up to 12% of patients die within 1 year of diagnosis[c,d]

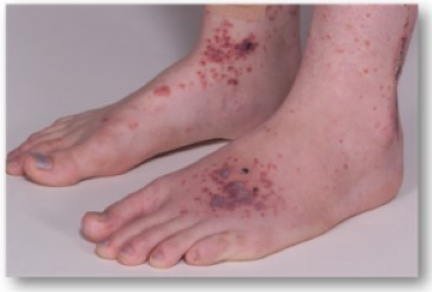
ANCA AAV, anti-neutrophil cytoplasmic antibody-associated vasculitis.

a. Berti A, et al. Arthritis Rheumatol. 2017;69:2338-2350; b. Lamprecht P, et al. Front Immunol. 2018;9:680; c. Little MA, et al. Ann Rheum Dis. 2010;69:1036-1043; d. Heijl C, et al. RMD Open. 2017;3:e000435.

AAV Spectrum



Purpura



Lung alveolar hemorrhage

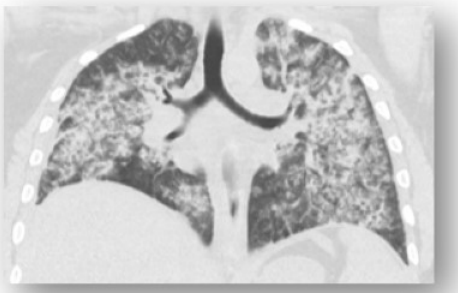
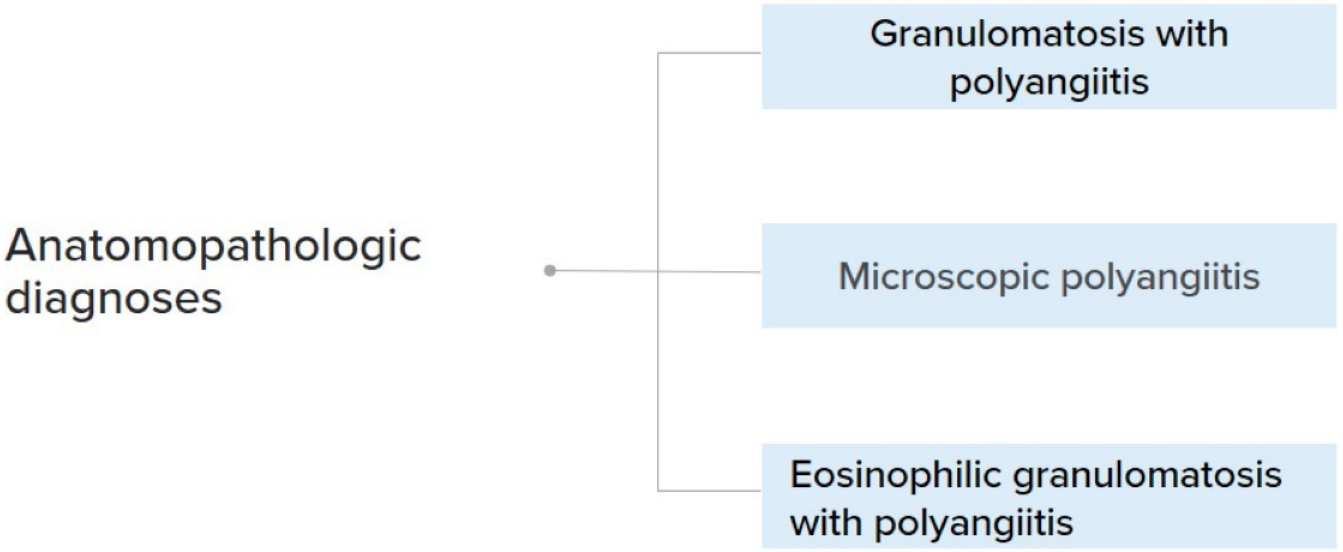


Image courtesy of Kenneth J. Warrington, MD.

Yates M, et al. Correction in: Ann Rheum Dis. 2017;76:1480; Kitching AR, et al. Nat Rev Dis Primers. 2020;6:71.

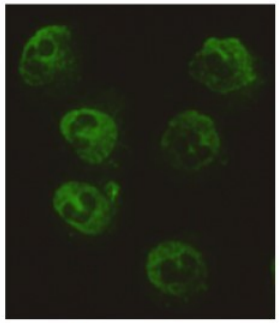
AAV: Specific Diagnosis

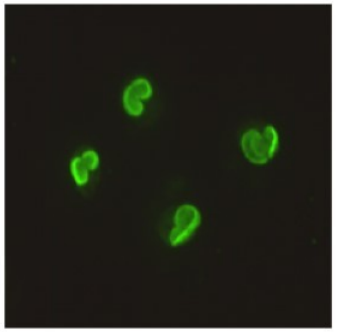


Jenette JC, et al. Arthritis Rheum. 2013;65:1-11.

AAV: Specific Diagnosis

GPA	MPA
▪ c-ANCA+	▪ p-ANCA+
▪ PR-3+	▪ MPO+
▪ Necrotizing vasculitis and granulomas	▪ Necrotizing vasculitis





Images courtesy of Kenneth J. Warrington, MD.

c-ANCA, cytoplasmic antineutrophil cytoplasmic antibody; GPA, granulomatosis with polyangiitis; MPA, microscopic polyangiitis; MPO, myeloperoxidase; p-ANCA, perinuclear antineutrophil cytoplasmic antibody; PR-3, proteinase-3.

Jenette JC, et al. Arthritis Rheum. 2013;65:1-11.

Recent Standard of Care

Induction[a]

Rituximab[a,b]
High-dose steroids[a,b]
Cyclophosphamide rarely[a,b]
Plasma exchange: no[a,c]

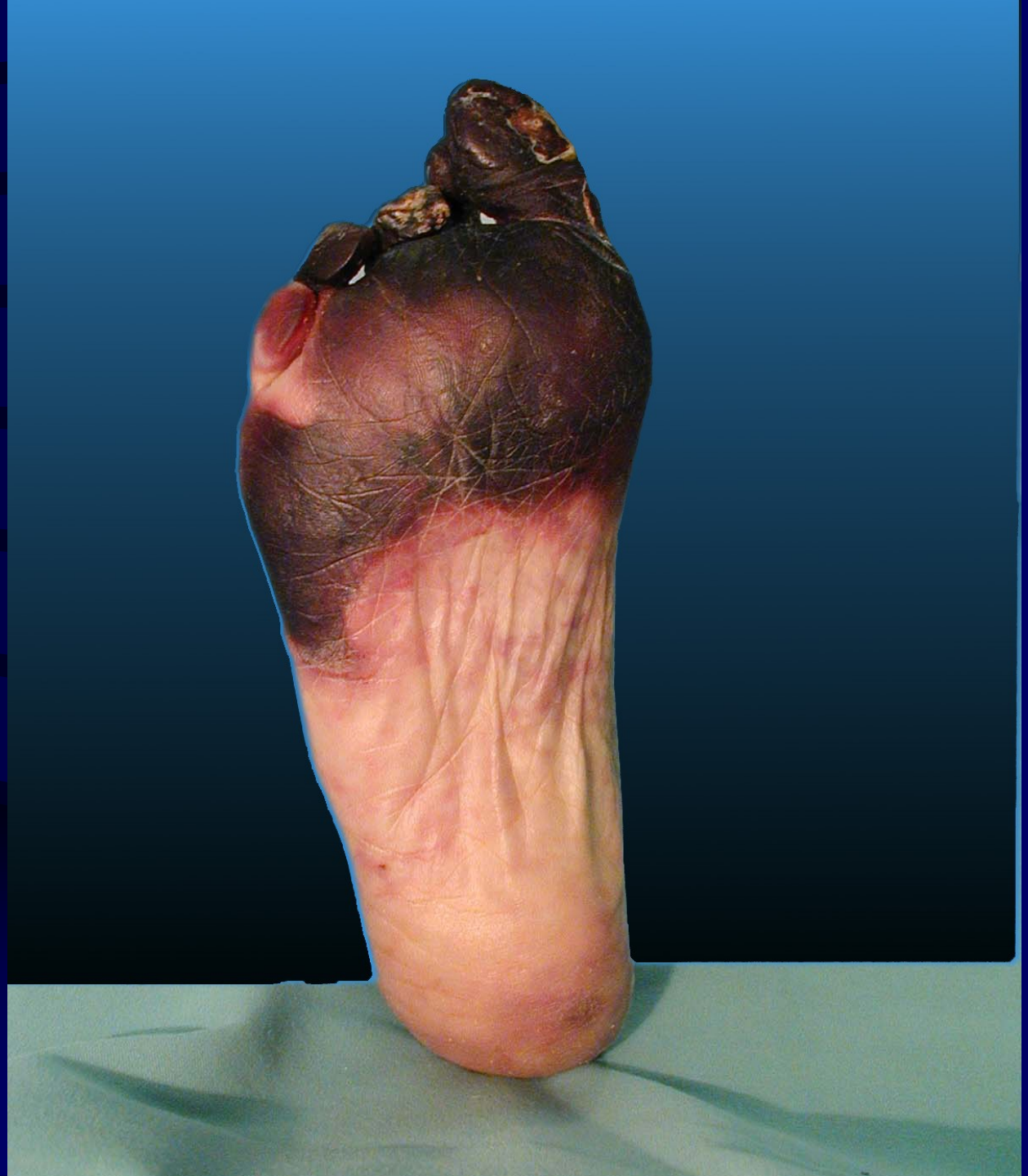
Maintenance

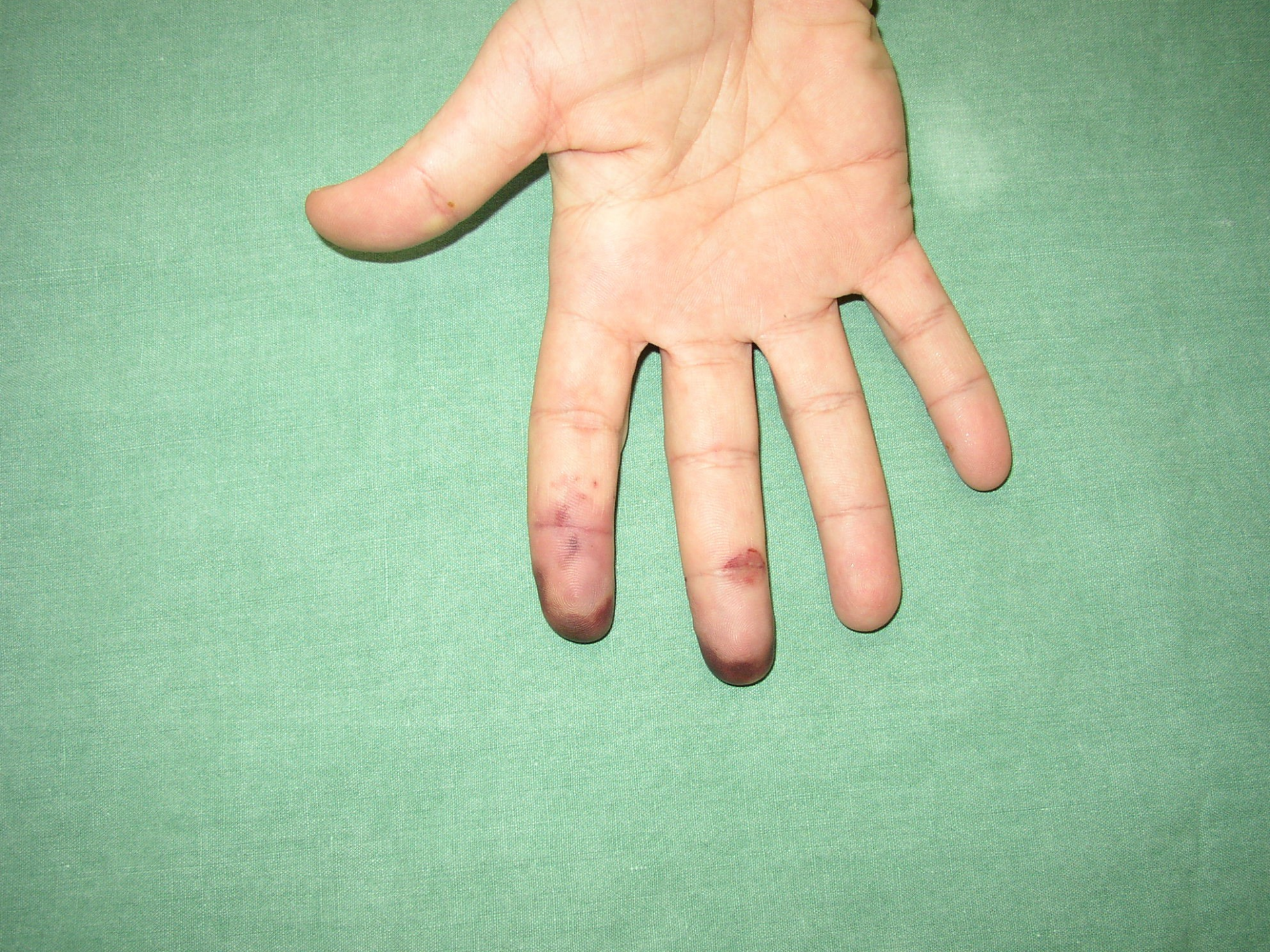
All patients do not need maintenance[b]
Rituximab for those who do [d]

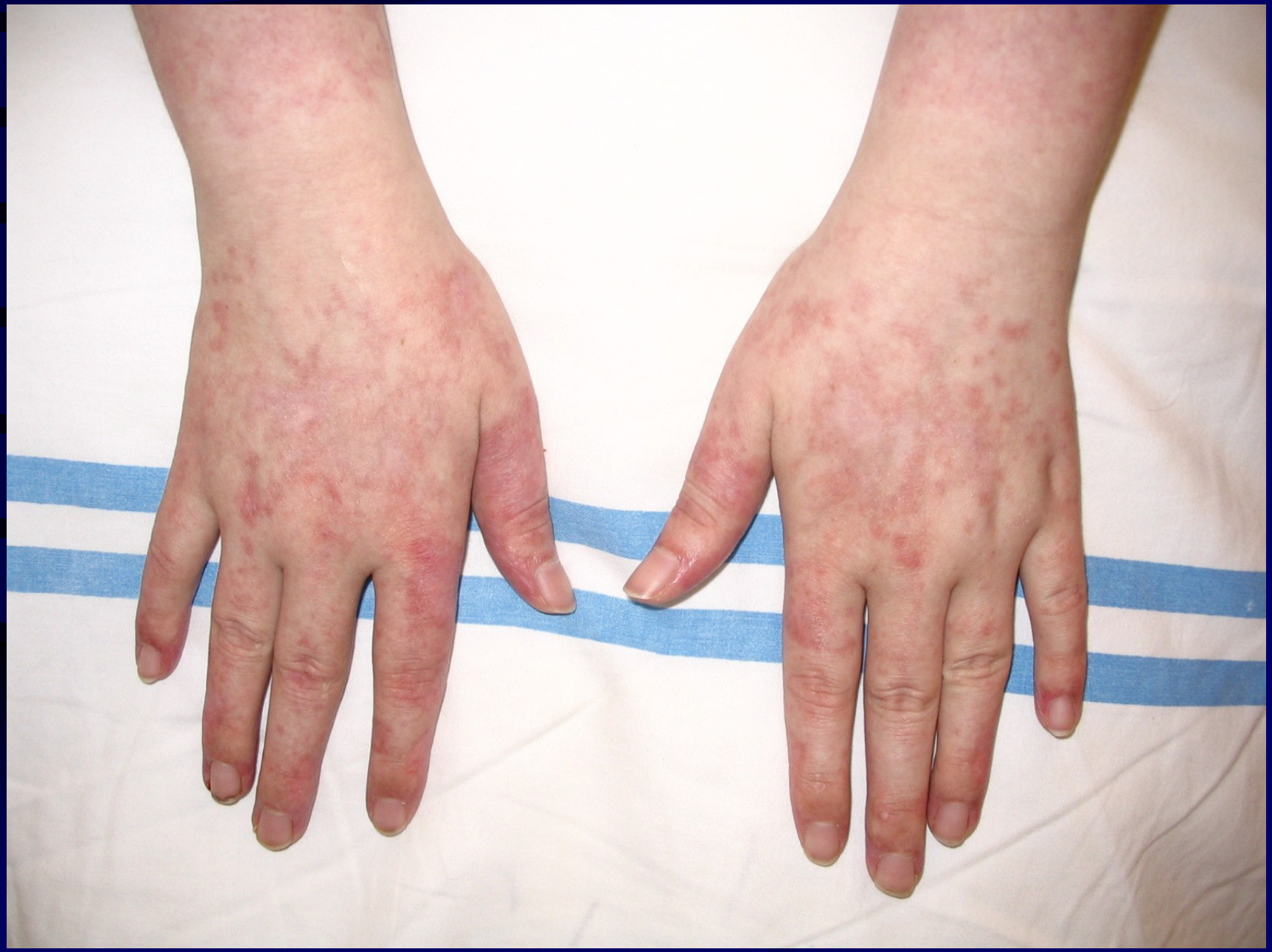
Shortcomings:

- Failure to achieve sound remission[d]
- High relapse rate in some subsets[d]
- Treatment-related toxicities:
  - Glucocorticoids[e,f]
  - COVID concerns, continuous B-cell depletion[g]

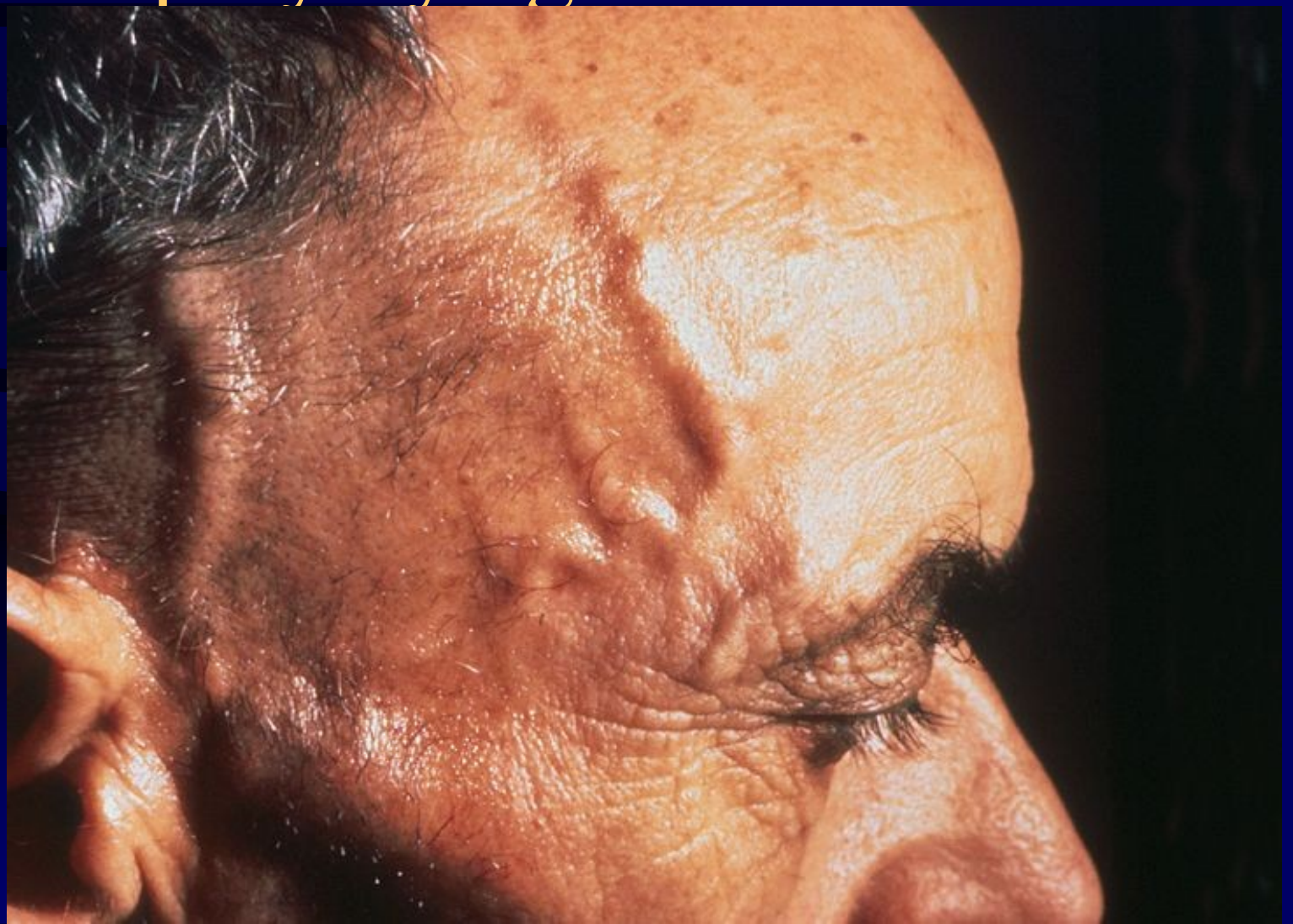
a. Chung SA, et al. Arthritis Rheumatol. 2021;73:1366-1383; b. Stone JH, et al. N Engl J Med. 2010;363:221-232 c. Walsh M, et al. N Engl J Med. 2020;382:622-631; d. Guillevin L, et al. N Engl J Med. 2014;371:1771-1780; e. Little MA, et al. Ann Rheum Dis. 2010;69:1036-1043; f. Robson J, et al. Ann Rheum Dis. 2015;74:177-184; g. Bruchfeld A, et al. Nephr Dialysis Transp. 2021;36:1758-1760







Giant cell arteritis and polymyalgia rheumatica



2022 AMERICAN COLLEGE OF RHEUMATOLOGY / EUROPEAN ALLIANCE OF ASSOCIATIONS FOR RHEUMATOLOGY

CLASSIFICATION CRITERIA FOR **GIANT CELL ARTERITIS**

CONSIDERATIONS WHEN APPLYING THESE CRITERIA

- These classification criteria should be applied to classify the patient as having giant cell arteritis when a diagnosis of large-vessel vasculitis has been made
- Alternate diagnoses mimicking vasculitis should be excluded prior to applying the criteria

CRITERIA ABSOLUTE REQUIREMENTS

Age ≥ 50 years at time of diagnosis	

ADDITIONAL CLINICAL CRITERIA

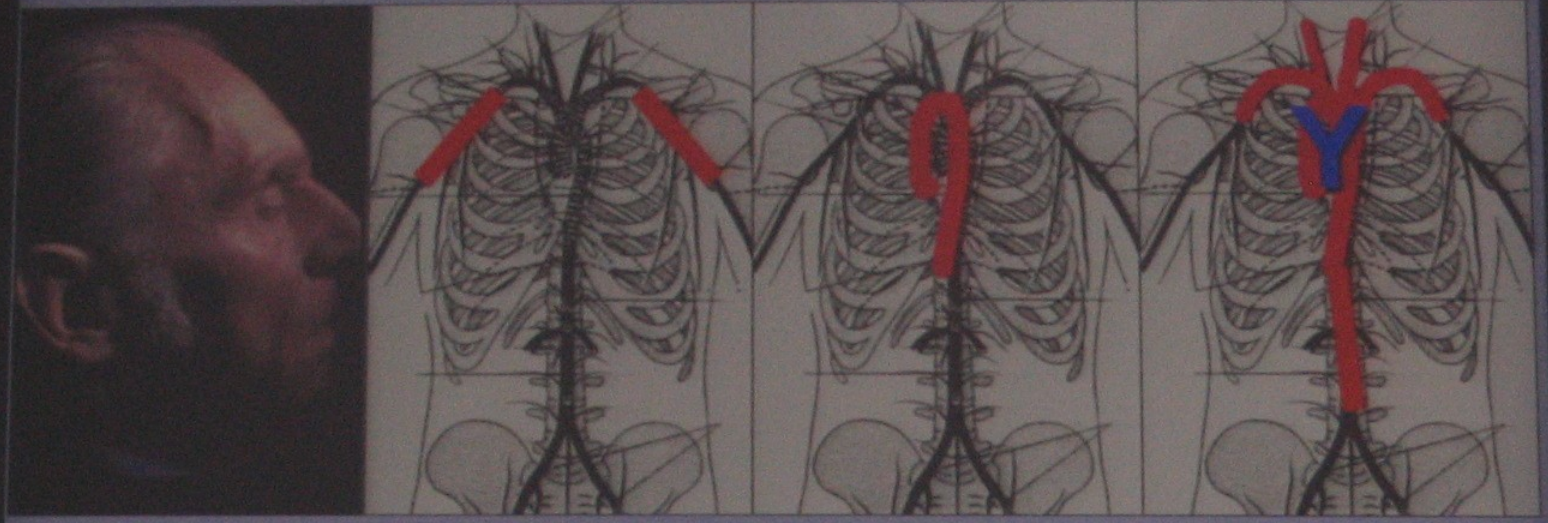
Morning stiffness in shoulders/neck	+2
Sudden visual loss	+3
Jaw or tongue claudication	+2
New temporal headache	+2
Scalp tenderness	+2
Abnormal examination of the temporal artery[1]	+2

LABORATORY, IMAGING, AND BIOPSY CRITERIA

Maximum ESR ≥ 50 mm/hour or maximum CRP ≥ 10 mg/liter[2]	+2
Positive temporal artery biopsy or halo sign on temporal artery ultrasound[3]	+5
Bilateral axillary involvement[4]	+2
FDG-PET activity throughout aorta[5]	+2

Sum the scores for 10 items, if present. A score of ≥ 6 points is needed for the classification of GIANT CELL ARTERITIS.

Large Vessel Vasculitis

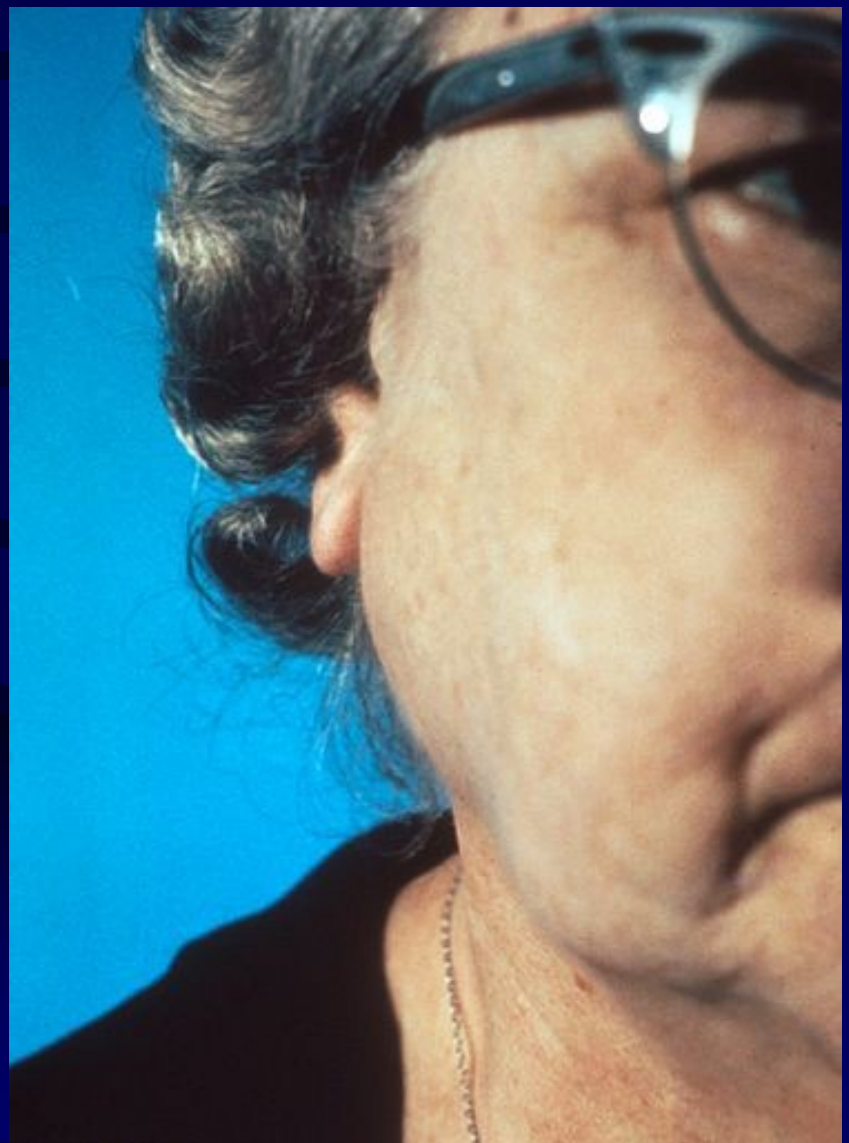


Temporal Arteritis	Large-Vessel GCA	Idiopathic Aortitis	Takayasu Arteritis

Sjogren syndrom

- Xerophtalmia
- Xerostomia
- Sausage fingers
- Pozitivity anti Ro and anti La antibodies

Zduření příušní žlázy



xerostomie