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Imaging and biochemical-molecular techniques for diagnosing autoimmune blistering dermatoses

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Autoimmune blistering dermatoses (ABDs) require precise diagnosis as generally aggressive therapies having potentially lethal side-effects are necessary. Nowadays, they can be reliably diagnosed using a combination approach with both imaging and biochemical-molecular techniques. Taking into account cost effectiveness, I am using an imaging technique with single-step direct immunofluorescence (DIF) of perilesional tissue and DIF of plucked scalp hair which is appropriate for evaluation of IgA, IgG, IgM, C3 as well as IgG4 and IgG1 subclasses deposits. Dew drops on spider web appearance is newly named by me, diagnostically valuable and putatively having implications for treatment, pattern of Th2-dependent IgG4 deposition in pemphigus diseases at an active-stage with DIF techniques. In addition to DIF, still the golden standard for diagnosing ABDs, serum studies using biochemical-molecular techniques, namely ELISA, are necessary. Currently, the author is using a multi-analyte ELISA enabling the detection of IgG antibodies to desmoglein 1, desmoglein 3, BP180, BP230, envoplakin and type VII collagen in a single procedure. In case of clinical suspicion of dermatitis herpetiformis an ELISA for serum IgA antibodies to tissue translglutaminase, instead of multi-analyte ELISA, is used in addition to DIF. Such a dual imaging/biochemical-molecular approach is usually sufficient to detect autoimmune nature of a blistering dermatosis in question, enabling one to resign from performing H+E histology and indirect immunofluorescence studies. Despite substantial progress in diagnosing ABDs heading toward all-in-one methodology, treatment schemes are still unsatisfactory. The aim of future therapeutic efforts should be based on a personalized medicine principle.

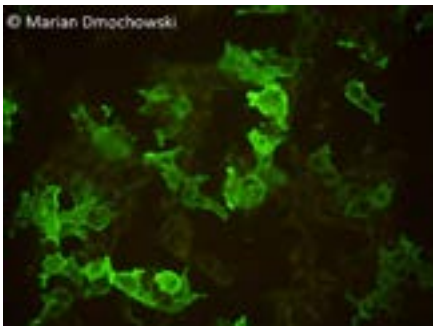

Figure 1: Serum IgG4 pemphigus antibodies in a male in his thirties with mucosal-dominant to and fro mucocutaneous shifting pemphigus vulgaris at relapsing stage detected with indirect immunofluorescence using human embryonal kidney HEK 293 cells transfected with extracellular and transmembraneous domains of desmoglein 3 (modified IIF mosaic originally manufactured by Euroimmun, Germany).

Recent Publications:

1. Gornowicz-Porowska J, Seraszek-Jaros A, Bowszyc-Dmochowska M, Kaczmarek E, Pietkiewicz P, et al. (2017) Analysis of the autoimmune response against BP180 and BP230 in ethnic poles with neurodegenerative disorders and bullous pemphigoid. Cent Eur J Immunol. 42(1):85–90.
2. Dmochowski M, Gornowicz-Porowska J and Bowszyc-Dmochowska M (2017) Dew drops on spider web appearance: a newly named pattern of IgG4 deposition in pemphigus with direct immunofluorescence. Postepy Dermatol Alergol. 34(4):295–298.
3. Gornowicz-Porowska J, Seraszek-Jaros A, Bowszyc-Dmochowska M, Kaczmarek E, Pietkiewicz P, et al. (2017) A comparative study of expression of Fc receptors in relation to the autoantibody-mediated immune response and neutrophil elastase expression in autoimmune blistering dermatoses. Pol J Pathol. 68(2):109–116.
4. Gornowicz-Porowska J, Seraszek-Jaros A, Bowszyc-Dmochowska M, Kaczmarek E and Dmochowski M (2017) Immunoexpression of IgA receptors (CD89, CD71) in dermatitis herpetiformis. Folia Histochem Cytobiol. 55(4):212–220.

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Biography

Marian Dmochowski—MD/PhD—is the Head of Autoimmune Blistering Dermatoses Section, Department of Dermatology, Poznan University of Medical Sciences, Poznan, Poland. His research interests are focused on autoimmune blistering dermatoses, particularly issues of improving diagnosing them with imaging and biochemical-molecular techniques, their comorbidities and improving management. His publications were cited almost 1,000 times. He is an active Member of the Society for Investigative Dermatology (USA).

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