ARUP LABORATORIES
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Jonathan R. Genzen, MD, PhD, Chief Medical Officer

Client: Example Client ABC123
123 Test Drive
Salt Lake City, UT 84108
UNITED STATES

Physician: Doctor, Example

Patient: Patient, Example

DOB	12/31/1965
Gender:	Female
Patient Identifiers:	01234567890ABCD, 012345
Visit Number (FIN):	01234567890ABCD
Collection Date:	00/00/0000 00:00

Direct Immunofluorescence, Tissue Biopsy (Cutaneous, Mucosal, Epithelial)

ARUP test code 0092572

EER Cutaneous Direct IF, Biopsy

See Note

Authorized individuals can access the ARUP Enhanced Report using the following link:

[redacted]

Cutaneous Direct IF, Biopsy

See Note

CLINICAL INFORMATION
Erythematous and urticarial plaques with occasional blisters, possible immune-mediated

Specimen Details
[redacted] - Left arm, punch, perilesional, sun-exposed; Collected: 2/2/2024; Received: 2/6/2024

DIAGNOSTIC INTERPRETATION

Nondiagnostic direct immunofluorescence findings

(See Results and Comments)

RESULTS
Examination of sun-exposed left arm perilesional skin punch biopsy tissue sections tested for immunoglobulins, complement, and fibrinogen reveals:

IgG: Negative

IgG4: Negative

IgM: 3+ few scattered and clumped cytoids

IgA: Negative

C3: Weak focal granular basement membrane zone

Fibrinogen: 2+ patchy deposition on connective tissue fibers

COMMENTS
The direct immunofluorescence findings in this specimen are nonspecific and can be found in dermatitis of various etiologies, urticarial reactions, drug eruptions, and other conditions. The granular immune deposits along the basement

H=High, L=Low, *=Abnormal, C=Critical

membrane zone are insufficient for lupus erythematosus, a lupus band, or the characteristic findings in hypocomplementemic urticarial vasculitis. No significant immunoglobulin-positive granules within or around epidermal keratinocytes, so-called, particulate intercellular, are observed as found associated with antibodies to extractable nuclear antigens, SSA (Ro) and SSB (La), and in subacute cutaneous lupus erythematosus. No features of antibody-mediated vasculitis are observed.

Although cytoid body formation is apparent in this specimen and can be a feature of a lichenoid reaction, the fibrinogen deposition is not the typical shaggy basement membrane zone pattern of a lichenoid reaction as found in lichen planus, drug reactions, and various other mucocutaneous disorders. No linear immunoglobulin reactivity or complement basement membrane zone localization is observed to support a diagnosis of pemphigoid and variants, including epidermolysis bullosa acquisita or linear IgA disease, or bullous lupus erythematosus. There is no cell surface/intercellular substance immunoglobulin reactivity or intercellular complement localization to support a diagnosis of pemphigus, including IgG pemphigus variants or IgA pemphigus. IgG4 subclass staining was performed because it may be more sensitive than IgG but did not demonstrate additional findings in this specimen. Ten sections were tested for IgA, instead of the usual three performed with this procedure, but did not reveal additional findings for IgA antibody-associated diseases including linear IgA disease, dermatitis herpetiformis, IgA vasculitis, or IgA pemphigus.

Clinical correlation is needed including with histopathological examination of formalin-fixed tissue. If indicated to further evaluate for immune-mediated disease, another biopsy specimen for direct immunofluorescence may provide more definitive immunopathological information. For nonblistering, inflammatory disease, a biopsy specimen for direct immunofluorescence of a lesion that is newly developed, less than 48 hours old, often is most sensitive for detecting a relevant immunopathological profile. For blistering disease, an additional perilesional biopsy from a proximal anatomical location (avoiding distal extremities) increases the possibility of detecting characteristic direct immunofluorescence findings in epithelial-antibody associated diseases. Serum testing also can be positive for epithelial antibodies when direct immunofluorescence is not and can be accomplished by submitting a serum specimen through ARUP Laboratories for:

- Immunobullous Disease Antibody Panel (ARUP test number 3001409);
  OR
- Basement Membrane Zone Antibody Panel(ARUP test number 3001410),
- Pemphigus Antibody Panel, IgG (ARUP test number 0090650), and/or
- Pemphigus Antibodies, IgA by IIF (ARUP test number 0092106).

Contact ARUP Client Services, 1-800-242-2787, option 2, for assistance, if needed.

TESTING METHODS
The perilesional right arm skin specimen received in Michel transport medium, is washed, cryoembedded into block, cryosectioned, and reacted with fluorescein isothiocyanate (FITC)-conjugated antibodies to IgG, IgG4, IgM, IgA, C3, and fibrinogen. IgG4 subclass staining is performed because IgG4 reactivity may be more sensitive than IgG in some immune-mediated diseases. The stained tissue sections are examined by fluorescence microscopy to identify patterns of positive reactivity that aid in the diagnosis of immune-mediated diseases. Positive findings are graded on a visual analog scale of 0-3+ (weak - detected; 1+ - definite, but relatively slightly, positive; 2+ - moderately positive intensity; 3+ - strongly positive). Negative control serial sections exposed to

bovine serum albumin (BSA) without antibody and a technically adequate hematoxylin and eosin (H and E)-stained slide are prepared and also examined for comparison to specific staining and for morphological orientation and features. This direct immunofluorescence (DIF) testing was developed, and its performance characteristics determined by the Immunodermatology Laboratory at the University of Utah. It has not been cleared or approved by the FDA (US Food and Drug Administration). FDA clearance or approval currently is not required for this testing performed in a CLIA-certified laboratory (Clinical Laboratory Improvement Amendments) and intended for clinical use.

Electronically signed by [redacted] on 02/08/24 at 5:42 PM.
Performed At: IMMUNODERMATOLOGY LABORATORY
417 S. WAKARA WAY, SUITE 2151
SALT LAKE CITY, UT 84108
Medical Director: KRISTIN M. LEIFERMAN, MD
CLIA Number: 46D0681916

VERIFIED/REPORTED DATES

Procedure	Accession	Collected	Received	Verified/Reported
EER Cutaneous Direct IF, Biopsy	24-033-118571	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Cutaneous Direct IF, Biopsy	24-033-118571	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00

END OF CHART

H=High, L=Low, *=Abnormal, C=Critical