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

Physician: Doctor, Example

Patient: Patient, Example

DOB	6/4/1982
Gender:	Male
Patient Identifiers:	01234567890ABCD, 012345
Visit Number (FIN):	01234567890ABCD
Collection Date:	01/01/2017 12:34

Eosinophil Granule Major Basic Protein, Tissue

ARUP test code 2010921

SO Source

SKIN

Performed at: ARUP - University Hospital Laboratory 50 N. Medical Drive Salt Lake City UT 84132

Eosinophil Granule MBP in Tissues

See Note

IMMUNODERMATOLOGY REPORT

Specimen(s):
1. Left deltoid, skin, excision, non sun exposed

Clinical/Diagnostic Information:
Presumptive diagnosis is autoimmune or exfoliative dermatitis. Has been told "psoriasis or pityriasis" in the past. Two year history of diffuse rash, erythematous and exfoliative, with scale formation and weeping. Worse on legs, back and sensitive skin over joints. Sometimes responsive to steroids. Pruritic, painful.

DIAGNOSTIC INTERPRETATION

Positive, modestly increased cellular and extracellular eosinophil granule major basic protein 1 (eMBP1)
Overall grade, 1/2-1+

(See Results and Comments)

RESULTS
Examination of the tissue sections stained for eosinophil granule major basic protein 1 (eMBP1) reveals:

Cellular*: 2+ intensity, 1/2-1+ extent
(Average maximal eosinophil count, 4 per high power field, 400 X, 2 HPF counted)

Extracellular: 1-2+ intensity, 1/2-1+ extent with focal confluent tissue and clusters of granules

* Intact cells showing positive eMBP1 staining counted per 400 X (40x objective lens and 10x eyepiece lens) high power field (HPF) in areas of sections with maximal cells. Some cells may not be counted as intact cells that are in areas of prominent

degranulation because of obfuscation with extracellular staining. Some degranulating/degranulated cells that appear mainly intact may be included. Eosinophil counts per 400 X HPF may be from different areas of tissue and/or overlapping/same areas in sequential sections because of the sectioning and the overall tissue architecture.

COMMENTS
Eosinophil infiltration and/or degranulation are present normally in thymus, lymph node, gastrointestinal tract from stomach through large intestine, and bone marrow and not in other tissues and organs. Therefore, any cellular and extracellular eosinophil granule major basic protein 1 (eMBP1) in skin is abnormal. The findings in this specimen demonstrate scattered upper dermal intact eosinophils with extracellular eMBP1 that is not greatly out-of-proportion to the infiltrating cells in amount or distribution. Although these findings are abnormal, they do not indicate a strong or predominant involvement of eosinophils in the inflammatory pathophysiology.

Eosinophil granule proteins, including eMBP1, have various and numerous toxic effects on tissues and organs. In determining whether eosinophil and eosinophil granule proteins may be playing a pathogenic role, consideration must be given to the treatment status of the patient (glucocorticoid therapy may rapidly reduce eosinophils in tissues) and whether the specimens are representative of involved tissues (active eosinophil inflammation of gastrointestinal tissues may be patchy). Extracellular eosinophil granule proteins may persist in tissues for a long time after deposition and may not reflect current activity. Moreover, some positive staining likely is the result, especially extracellular granules, of crush artifact in the procurement and freeze artifact in the processing of the tissues.

Overall, the eosinophil granule protein staining in this specimen demonstrates positive, but modest, intact cellular infiltration and extracellular eMBP1 deposition. As judged by the staining, eosinophil activity, as a contributor to the pathophysiology, is not marked. However, the findings in this specimen could be a remnant of a previous tissue state with greater eosinophil involvement and do not exclude the possibility of greater involvement elsewhere. As noted in concurrent direct immunofluorescence testing (separate report with additional comments), there is relatively prominent crust in this tissue which shows nonspecific positive staining including for eMBP1. The direct immunofluorescence findings, as reported in the concurrent testing, are nondiagnostic, also demonstrating nonspecific inflammatory features. Correlation with clinical presentation, including treatment status, and histopathological examination of formalin-fixed tissue is needed, although extracellular granule protein deposition and degranulating cells likely would not be recognized in formalin-fixed tissues.

Digital images of representative findings from the immunostaining are available for this specimen. If you would like a hard copy or an electronic file of the images or if it would be helpful to discuss this patients case with this report, contact ARUP Client Services, 801-583-2787 (or toll free at 1-800-242-2787) option 2, and ask to be connected to the Immunodermatology Laboratory. Once connected with the Immunodermatology Laboratory, for images, please provide the ACCESSION NUMBER, full patient name, and where to send the images.

TESTING METHODS
The skin biopsy specimen received in Michels transport medium and cryoembedded is further cryosectioned. The sections are stained with polyclonal antibody to eosinophil granule major

basic protein 1 (eMBP1) by indirect immunofluorescence, utilizing a fluorescein-conjugated secondary antibody for detection, and subsequently examined by fluorescence microscopy to identify intact eosinophils and extracellular eosinophil granule protein deposition. The antibody-stained sections are compared to serial sections stained with normal rabbit IgG (as a negative control) and graded on a visual analog scale with reference images. In addition to the overall grade for cellular and extracellular staining, the intact eosinophil count, average per high power field, 400 X, is performed. A technically adequate hematoxylin and eosin-stained slide of the tissue is comparatively examined for morphological features and orientation. A skin biopsy specimen with multiple infiltrating eosinophils and extensive extracellular eosinophil granule protein deposition of eMBP1 serves as a positive control and shows the expected staining in this assay, as verification of the assays specificity and validity. This test 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 U.S. Food and Drug Administration.

[redacted], MD
Immunodermatologist
Electronically signed 3/25/2019 11:07:18PM
Performed at: ARUP - University Hospital Laboratory 50 N. Medical Drive Salt Lake City UT 84132

EER Eosinophil Granule MBP in Tissues

See Note

Access ARUP Enhanced Report using the link below:

-Direct access:

VERIFIED/REPORTED DATES

Procedure	Accession	Collected	Received	Verified/Reported
SO Source	19-077-402667	3/15/2019 4:02:00 PM	3/21/2019 10:28:47 AM	3/26/2019 3:13:00 PM
Eosinophil Granule MBP in Tissues	19-077-402667	3/15/2019 4:02:00 PM	3/21/2019 10:28:47 AM	3/26/2019 2:59:00 PM
EER Eosinophil Granule MBP in Tissues	19-077-402667	3/15/2019 4:02:00 PM	3/21/2019 10:28:47 AM	3/26/2019 2:59:00 PM

END OF CHART

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