

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

Physician: Doctor, Example

**Patient: Patient, Example**

**DOB:** 12/31/1752  
**Gender:** Unknown  
**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 punch

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):  
Esophagus

Clinical/Diagnostic Information:  
Eosinophilic esophagitis

DIAGNOSTIC INTERPRETATION

Negative, normal findings for cellular and extracellular  
eosinophil granule major basic protein 1 (eMBP1)  
Overall grade, 0

(See Results and Comments)

RESULTS

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

Cellular\*: Negative  
(Average eosinophil count, 0 per high  
power field, 400 x)

Extracellular: Negative

\* 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.

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

Unless otherwise indicated, testing performed at:

**ARUP LABORATORIES | 800-522-2787 | aruplab.com**  
500 Chipeta Way, Salt Lake City, UT 84108-1221  
Tracy I. George, MD, Laboratory Director

Patient: Patient, Example  
ARUP Accession: 19-288-102479  
Patient Identifiers: 01234567890ABCD, 012345  
Visit Number (FIN): 01234567890ABCD  
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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, cellular and extracellular eosinophil granule major basic protein 1 (eMBP1) staining normally is not found in esophagus tissue specimens. The negative findings with this testing, therefore, are normal.

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.

The eosinophil granule protein staining in these tissue specimens is negative without evidence of intact cellular infiltration or extracellular protein deposition. As judged by the staining, eosinophil activity, as a contributor to the pathophysiology, is not apparent. However, these findings do not exclude the possibility of more prominent involvement elsewhere, particularly because eosinophil-related inflammation often is patchy in the esophagus and other areas of the gastrointestinal tract. 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 direct immunofluorescence findings are available for this specimen. If you would like a hard copy or an electronic file of the images, 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, please provide the ACCESSION NUMBER, full patient name and where to send the images.

TESTING METHODS

The biopsy specimens of esophagus received in Michels transport medium are cryoembedded into one block and 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

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Patient Identifiers: 01234567890ABCD, 012345  
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by the U.S. Food and Drug Administration.

██████████, M.D.  
Immunodermatologist  
Electronically signed 10/22/2019 12:17:17PM  
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	19-288-102479	10/15/2019 9:01:00 AM	10/25/2019 7:31:08 AM	10/29/2019 1:03:00 PM
Eosinophil Granule MBP in Tissues	19-288-102479	10/15/2019 9:01:00 AM	10/25/2019 7:31:08 AM	10/25/2019 7:32:00 AM
EER Eosinophil Granule MBP in Tissues	19-288-102479	10/15/2019 9:01:00 AM	10/25/2019 7:31:08 AM	10/29/2019 10:45:00 AM

END OF CHART

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Unless otherwise indicated, testing performed at: