MAYO CLINIC LABORATORIES

Test Definition: MASF

MYC (8q24), Angiosarcoma, FISH, Ts

Overview

Useful For

Identifying *MYC* amplification to aid in the differentiation of cutaneous angiosarcomas from atypical vascular lesions after radiotherapy
An aid in the diagnosis of primary cutaneous angiosarcoma

Testing Algorithm

This test does not include a pathology consultation. If a pathology consult is requested, PATHC / Pathology Consultation should be ordered and the appropriate fluorescence in situ hybridization (FISH) test will be ordered and performed at an additional charge.
This test includes a charge for application of the first probe set (2 FISH probes) and professional interpretation of results.

Additional charges will be incurred for all reflex probes performed. Analysis charges will be incurred based on the number of cells analyzed per probe set. If no cells are available for analysis, no analysis charges will be incurred.

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
_PBCT	Probe, +2	No	No
_PADD	Probe, +1	No	No
_PB02	Probe, +2	No	No
_PB03	Probe, +3	No	No
_IL25	Interphases, <25	No	No
_I099	Interphases, 25-99	No	No
_I300	Interphases, >=100	No	No

Method Name

Fluorescence In Situ Hybridization (FISH)

NY State Available

Yes

Specimen

Specimen Type

Tissue

Shipping Instructions

Advise Express Mail or equivalent if not on courier service.

Necessary Information

1. A pathology report is required in order for testing to be performed. Acceptable pathology reports include working drafts, preliminary pathology or surgical pathology reports.

2. A reason for testing must be provided. If this information is not provided, an appropriate indication for testing may be entered by Mayo Clinic Laboratories.

Specimen Required

Submit only 1 of the following specimens:

Specimen Type: Tissue

Preferred: Tissue block

Collection Instructions: Submit a formalin-fixed, paraffin-embedded (FFPE) tumor tissue block. Blocks prepared with alternative fixation methods may be acceptable; provide fixation method used.

Acceptable: Slides

Collection Instructions: Four consecutive, unstained, 5 micron-thick sections placed on positively charged slides, and 1 hematoxylin and eosin-stained slide.

Forms

If not ordering electronically, complete, print, and send an Oncology Test Request (T729) with the specimen.

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Minimum Volume

Two consecutive, unstained, 5 micron-thick sections placed on positively charged slides and 1 hematoxylin and eosin-stained slide.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Tissue	Ambient (preferred)		
	Refrigerated		

Clinical & Interpretive

Clinical Information

Postradiation cutaneous angiosarcoma is a malignancy associated with very poor outcome and is consequently treated aggressively. Conversely, atypical vascular lesions are also associated with radiation therapy but are considered to be benign and do not require aggressive management. Therefore, the differentiation of these neoplasms is of considerable clinical importance. Postradiation cutaneous angiosarcomas are characterized by high-level amplification of *MYC*, whereas reactive and benign vascular lesions do not show amplification of *MYC*. Similar diagnostic difficulties arise in the setting of primary cutaneous vascular lesions. A subset of primary cutaneous angiosarcomas also shows high-level *MYC* amplification, which can be useful in the differentiation from benign primary cutaneous vascular lesions.

Reference Values

An interpretive report will be provided.

Interpretation

The *MYC* locus is reported as amplified when the *MYC*:D8Z2 ratio of 2.0 or greater and demonstrates 6 or more copies of the *MYC* locus.

A lesion with a *MYC*:D8Z2 ratio less than 2.0 or showing a ratio of 2.0 or greater with less than 6 copies of *MYC* is considered to lack amplification of the *MYC* locus.

Cautions

This test is not approved by the US Food and Drug Administration, and it is best used as an adjunct to existing clinical and pathologic information.
This test is only for the distinction of cutaneous angiosarcomas from benign cutaneous vascular lesions, particularly in the postradiation setting.
Fixatives other than formalin (eg, Prefer, Bouin) may not be successful for fluorescence in situ hybridization (FISH) assays; however non-formalin-fixed samples will not be rejected.
Paraffin-embedded tissues that have been decalcified may not be successful for FISH analysis. FISH studies will be attempted if sufficient tumor is present for analysis. However, if no FISH signals are observed post-hybridization, the case will be released indicating a lack of FISH results.

Supportive Data

The probe set was independently validated in a blinded study on 23 paraffin-embedded primary and post radiation angiosarcoma tissue samples and 25 noncancerous control specimens. The normal controls were used to generate the normal cutoffs. *MYC* amplification was detected in 4 (17.4%) of the angiosarcomas and the incidence is consistent with published reports.

Clinical Reference

1. Mentzel T, Schildhaus H, Palmedo G, et al: Postradiation cutaneous angiosarcoma after treatment of breast carcinoma is characterized by *MYC* amplification in contrast to atypical vascular lesions after radiotherapy and control cases: clinicopathological, immunohistochemical and molecular analysis of 66 cases. Mod Pathol. 2012;25:75-85
2. Manner J, Radlwimmer B, Hohenberger P, et al: *MYC* high level gene amplification is a distinctive feature of angiosarcomas after irradiation or chronic lymphedema. Am J Pathol. 2010;176(1):34-39

Performance

Method Description

The test is performed using a commercially available probe set for *MYC* and the centromere region of chromosome 8 (D8Z2). Paraffin-embedded tissues are cut at 5 microns and mounted on positively charged glass slides. The selection of tissue and the identification of target areas on the hematoxylin and eosin (H and E)-stained slide are performed by a pathologist. Using the H and E-stained slide as a reference, target areas are etched with a diamond-tipped etcher on the back of the unstained slide to be assayed. The probe set is hybridized to the appropriate target areas and 2 technologists each analyze 30 interphase nuclei (60 total) per probe set with the results expressed as a ratio of *MYC*:D8Z2 signals.(Unpublished Mayo method)

PDF Report

No

Specimen Retention Time

Slides and H and E used for analysis are retained by the laboratory in accordance to CAP and NYS requirements. Client provided paraffin blocks and extra unstained slides (if provided) will be returned after testing is complete.

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

This test was developed using an analyte specific reagent. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

88271x2, 88291-DNA probe, each (first probe set), Interpretation and report
88271x2-DNA probe, each; each additional probe set (if appropriate)
88271x1-DNA probe, each; coverage for sets containing 3 probes (if appropriate)
88271x2-DNA probe, each; coverage for sets containing 4 probes (if appropriate)
88271x3-DNA probe, each; coverage for sets containing 5 probes (if appropriate)
88274 w/modifier 52-Interphase in situ hybridization, <25 cells, each probe set (if appropriate)
88274-Interphase in situ hybridization, 25 to 99 cells, each probe set (if appropriate)
88275-Interphase in situ hybridization, 100 to 300 cells, each probe set (if appropriate)