

MDM2 Gene Amplification by FISH

Indications for Ordering

Aid in the differential diagnosis between well-differentiated liposarcoma and benign lipoma

- Individuals diagnosed with or suspected of having well-differentiated liposarcoma based on tissue morphology

Test Description

- Fluorescence in situ hybridization (FISH) analysis on formalin-fixed, paraffin-embedded (FFPE) tissue
- DNA probes
 - *MDM2* (12q15)
 - *CEP12* (control probe)
- 20 cells evaluated from regions of tumor identified on histopathologic review of a matching hematoxylin and eosin stained section

Tests to Consider

Primary test

[MDM2 Gene Amplification by FISH 2003016](#)

Related test

[MDM2 by Immunohistochemistry 2005848](#)

- Not recommended for well-differentiated liposarcomas lacking atypical cells
 - Immunohistochemical sensitivity, in this setting, may yield false-negative results
 - In these cases, *MDM2* FISH (2003016) is recommended

Disease Overview

Incidence

- ~5,000 new liposarcoma cases/year in U.S.
 - ~20% of all soft-tissue sarcomas

Age of onset – ~50 years of age

Diagnostic issues

- Liposarcoma is a soft-tissue tumor that typically arises from deep-seated stroma in the limbs and retroperitoneum
- Tumor type named for location of tumor
 - Atypical lipomatous tumors (ALT) – extremities or body wall areas
 - Most common liposarcoma subtype
 - Well-differentiated liposarcomas (WDLPS) – located in retroperitoneum
 - Spectrum of well-differentiated liposarcomas is referred to as ALT/WDLPS
- Differentiating between benign lipomatous tumor and well-differentiated liposarcomas is difficult due to morphological similarities
- Diagnosis of well-differentiated liposarcomas is important due to the risk of recurrence and progression to dedifferentiated liposarcoma, a more aggressive tumor form
 - Benign lipoma is not characterized by *MDM2* amplification

Genetics

Gene – *MDM2*

- Well-differentiated liposarcoma – typically associated with giant chromosomes that contain amplicons of the 12q13-15 chromosomal region

Test Interpretation

Results

- Amplified – *MDM2*/*CEP12* ratio >2.0
 - Strongly supports a diagnosis of well-differentiated liposarcoma
- Nonamplified – *MDM2*/*CEP12* ratio ≤2.0

Limitations

- Results may be compromised if the recommended fixation procedures have not been followed
- Test cannot be used to assess dedifferentiation of liposarcomas