

## C-39

# RNA based In Situ Hybridization for Polyoma Virus is Helpful in Differentiating Merkel Cell Carcinoma from Other High Grade Neuroendocrine C

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**BACKGROUND:** Differentiation of Merkel cell carcinoma (MCC) from other high-grade neuroendocrine carcinomas (HGNECs) is challenging in the setting of an unknown primary site and has significant therapeutic implications. Morphologic features and immunohistochemistry (IHC), including CK20, are generally used to arrive at the final diagnosis. However, other HGNECs can be CK20 positive. Merkel cell polyomavirus (MCPyV) has been detected in 50 to 80% of MCC and PCR-based testing for MCPyV has been shown to be specific for MCC. In this study, we sought to determine the diagnostic utility of an MCPyV RNA ISH probe in separating MCC from other HGNECs.

**METHODS:** A paraffin tissue microarray consisting of 38 MCC and 42 other HGNEC cases (23 small cell carcinoma and 19 large cell neuroendocrine carcinoma, from visceral sites including: lung n=21, bladder n=11, gastroenteropancreaticobiliary n=5, and gynecologic tract n=5) was stained for MCPyV RNA ISH probe A and CK20 immunostain. The results were recorded as positive and negative. An additional biopsy of peripancreatic HGNEC with no prior history was also stained for MCPyV RNA ISH probe A and CK20.

**RESULTS:** Twenty of 38 (53%) of MCC were reactive with the MCPyV stain and all 42 HGNECs were negative. All MCC (100%) were CK20 positive (dot-like); however, 4 (10%) HGNECs were also positive for CK20, although staining was diffusely cytoplasmic. CK20 showed 100% sensitivity for MCC and MCPyV RNA ISH probe

A was 100% specific for MCC. The peripancreatic HGNEC showed positivity for MCPyV stain and CK20 stain (dot-like), based on which the diagnosis of visceral MCC was made. This patient responded to MCC therapy.

**CONCLUSION:** When used in combination with CK20, the Merkel Cell Polyoma Virus in situ hybridization probe is useful in differentiating MCC from other HGNECs, particularly when applied at visceral or nodal sites.