

Identification of Tissue of Origin in Body Fluid Specimens Using a Gene Expression Microarray Assay

GA Stancel, D Coffey, K Alvarez, M Halks-Miller, A Lal, D Mody,
T Koen, T Fairley, FA Monzon

Cancer Cytopathol, Jun 29, 2011 ©American Cancer Society

BACKGROUND

Body fluid specimens may be the first and only pathologic specimen for clinical evaluation in metastatic cancer cases. The challenge of identifying the tissue of origin in metastatic cancer has led to the emergence of molecular-based assays, such as the microarray-based Pathwork Tissue of Origin gene expression test. The ability to use body fluid specimens in this test would be valuable in providing diagnoses to cancer patients without clearly identifiable primary sites. In the current study, the authors evaluated the Tissue of Origin Test for use with malignant effusion specimens.

METHODS

A total of 27 metastasis-positive body fluid specimens from different body sites, including pleural, ascites, pericardial, and pelvic wash fluids, were obtained from patients with known diagnoses. Nine specimens from nonmalignant body fluids were included as controls. RNA was extracted from formalin-fixed, paraffin-embedded (FFPE) tissue and gene expression analysis was performed with the Tissue of Origin Test.

RESULTS

Seventeen of 27 metastasis-positive samples were non-necrotic with $\geq 60\%$ tumor and yielded sufficient RNA. Of these samples, 94.1% (16 of 17) were in agreement with the available diagnosis. Of the 9 negative control samples evaluated, 7 (77.8%) demonstrated microarray expression profiles most similar to lymphoma, which is consistent with the predominance of inflammatory cells in these specimens.

CONCLUSIONS

The results of the current study demonstrated that FFPE cell blocks from cytologic body fluid specimens yield adequate diagnostic material for the Pathwork test and can be used in the workup of patients with unknown primary tumors.

For information about the Pathwork® Tissue of Origin Test, please contact Pathwork Diagnostics at info@pathworkdx.com or call 1-877-808-0006