Evaluation of flow cytometric immunophenotyping and DNA analysis for detection of malignant cells in serosal cavity fluids.

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Abstract:

The serosal cavities are frequent sites of tumor metastasis. The distinction between carcinoma cells, inflammatory cells, and reactive or malignant mesothelial cells can be difficult in cytology. Multicolor flow cytometry (FCM) provides the opportunity to evaluate multiple antigens simultaneously, making it possible to characterize various cell populations. In this study, we aimed to assess the diagnostic accuracy of FCM immunophenotyping and DNA in comparison with serum tumor markers and classic cytology for detection of malignant cells in pleural and ascitic fluids. One hundred and nineteen samples of body cavity fluids were analyzed. Immunophenotyping was performed by four-color immunofluorescent staining using monoclonal antibodies against Ber-EP4, cytokeratin, CD3, and CD45. The DNA analysis by FCM was also performed. In addition, serum CA19-9, CEA, AFP, and CA125 were analyzed. Ber-EP4 marker had the highest sensitivity (73%) and specificity (95.5%) in the detection of carcinoma cells in serous fluid and correlated with cytology in most of cases (73%). The mean of DI differed statistically in patients with malignant effusions than in benign one. DI showed no difference in fluids due to infiltration of malignant epithelial cells or hematopoietic malignancy or due to hepatocellular carcinoma developing in cirrhotic liver. Thus, flow cytometry appears to aid not only in the detection of malignant cells but also in the characterization of cell type. On the other hand, although DNA ploidy examination had better sensitivity; it had no advantage over conventional cytopathological examination in identification of malignant cells. 2009 Wiley-Liss, Inc.

Keywords:

flow cytometric; Ber-EP4; DNA analysis; serosal fluids

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