Aim: Various tumor markers have been evaluated to diagnose malignant pleural effusions, but not CD66c, a member of the CEACAM family. This study evaluated the diagnostic ability of CD66c in lung adenocarcinoma-associated malignant pleural effusions (LA-MPEs) and compared with other known tumor markers (CEA, CA 19-9, and CYFRA 21-1).

Methods: Pleural effusions were collected from 47 patients with LA-MPE, and from 52 patients with benign conditions. The levels of CD66c, CEA, CA 19-9, and CYFRA 21-1 were measured by enzyme immunoassay. The expression of CD66c, CEA, and CA 19-9 in effusion cell blocks was measured by immunocytochemical staining.

Results: The levels of all tumor markers were significantly higher in LA-MPE than in BPE (p < 0.001). As a single marker, CEA had the best diagnostic values, with a sensitivity of 87.2% and specificity of 92.3%. Both CD66c and CA 19-9 showed the highest specificity of 98.1%, with sensitivities of 63.8% and 55.3%, respectively. CYFRA 21-1 had a sensitivity of 83.0% and specificity of 76.9%. CEA combined with CA 19-9 reached a sensitivity of 91.5% and a specificity of 98.1%. The sensitivities of immunocytochemical staining for CD66c, CEA, and CA 19-9 were 72.5%, 75%, and 40%, respectively. The correlations of the immunoassay and immunocytochemical study for CD66c, CEA, and CA 19-9 were statistically significant (P < 0.001). No benign cases were stained for all three markers.

Conclusions: CD66c showed a diagnostic performance comparable to CYFRA 21-1 and CA 19-9 by enzyme immunooassay. Immunocytochemical study showed that CD66c and CEA were more sensitive than CA19-9. Both studies support CD66c as a potential tumor marker to differentiate LA-MPE from benign effusions.

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