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Journal club

Differentiation of malignant pleural mesothelioma from other pleural diseases

In this study, pleural effusion samples from 101 patients with suspected or newly diagnosed malignant pleural mesothelioma (MPM) or metastatic adenocarcinoma (ADCA) were collected between 1998 and 2010. Of the 101 patients, 65 were diagnosed with MPM, 25 with ADCA and 15 with benign pleural effusion. Cancer cells isolated from pleural effusion samples were subjected to genome-wide gene expression analysis, done with the help of microarrays and real-time PCR.

The study found 74 genes coding for markers that were overexpressed in MPM and 9 genes that were overexpressed in ADCA. The highest expression in MPM cells was the gene COL3A1, coding for type III collagen. Immunohistochemistry demonstrated 100% staining of MPM biopsy samples with antibodies specific for COL3A1 and no staining in ADCA.

Soluble markers such as CCL2 and galectin-3 were identified as useful markers for diagnosing MPM. CCL2 concentration was significantly higher in patients with MPM than in patients with ADCA or benign pleural effusion whereas galectin-3 was significantly lower in MPM compared with ADCA. CCL2 and COL3A1 can be used as positive markers, whereas galectin-3 can be used as a negative marker. Statistical analysis using receiver operating characteristic curve and sensitivity suggested that both these markers performed better than existing markers in differentiating MPM from other pleural diseases.

Although type III collagen, CCL2 and galectin-3 markers have been shown to be valuable diagnostic aids, a large multicentre study is required to validate these results and investigate other potential markers.

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