MALIGNANT PLEURAL MESOTHELIOMA FROM SUBJECTS WITH SIMILAR PROFESSIONAL ASBESTOS EXPOSURE

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Malignant Pleural Mesothelioma (MPM) is an aggressive tumour, whose main aetiology is the long-term exposure to asbestos fibres. The diagnostic procedure of MPM is difficult and often requiring invasive approaches: therefore it is clinically important to find accurate markers for MPM by new non-invasive methods that may facilitate the diagnostic process and identify patients at an earlier stage. In the present study the exhaled breath of 13 patients with histology established diagnosis of MPM, 13 subjects with long-term certified professional exposure to asbestos (EXP), and 13 healthy subjects without exposure to asbestos (HC) were analysed. An analytical procedure to determine volatile organic compounds by sampling of exhaled air on a bed of solid sorbent and TD-GC-MS analysis was developed in order to identify the compounds capable of discriminating among the three groups. The application of univariate (ANOVA) and multivariate statistical treatments (PCA, DFA and CP-ANN) showed that cyclopentane and cyclohexane were the dominant variables able to discriminate among the three groups. In particular it was found that cyclohexane is the only compound able to differentiate MPM group from the other two; therefore it can be a possible marker of MPM. Cyclopentane is the dominant compound in the discrimination between EXP and the other groups (MPM and HC), then it can be considered a good indicator for long-term asbestos exposure. This result suggests the need of frequent and thorough checks on EXP subjects in order to constantly monitor their health and then possibly to study the evolution of MPM over time.

Keywords: malignant pleural mesothelioma, biomarkers