APPLICATION OF CELL-BLOCK METHOD FOR DIAGNOSIS OF DIFFUSE MALIGNANT MESOTHELIOMA

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Background
The incidence of diffuse malignant mesothelioma (DMM) continues to increase, but the disease remains difficult to make conclusive diagnosis. One of the early symptoms of DMM is known to be body cavity fluid which can be available for cytological examination as well as biochemical study. Careful cytological approach of the body cavity fluid could be one of the best diagnostic methods particularly in the initial aspiration. Because adhesion of the serous membrane may occur after aspiration and re-aspiration could be difficult. Conclusive diagnosis of DMM requires careful immunocytochemical study in addition to the routine cytological examination using Papanicolaou and Giemsa stainings. In the present study, applicability of cell-block method for the immunocytochemistry of the fluid material was evaluated.
Design
A total of 21 cases with pleural effusion (16 cases) or ascites (5 cases) were selected and analyzed in this study. In these cases, both Papanicolaou smear and cell-block were prepared from the obtained materials. After routine cytological examination using Papanicolaou smear was performed in each case, immunocytochemical study was made using 3 micrometer section of the paraffin block (cell-block) of formalin-fixed cells after centrifugation of the liquid material. Several panels of antibodies were selected for differential diagnosis in each case.
Results
Immunocytochemical reaction was satisfactorily performed using the section of cell-block both in pleural fluid and ascites. Although relatively intense reaction at the edge of the section (edge effect) was noted in some cases, identification of the each reaction product was possible. Four cases were diagnosed as DMM in which all cases were pleural DMM. Two cases among them were confirmed as DMM by histopathological examination. DMM was suspected by the cell-block study in another case that was lost in our file during follow-up period. The other cases were as follows; adenocarcinoma 11 cases (lung 4 cases, stomach 1, ovary 2, unknown origin 4), small cell carcinoma 2 (lung), sarcomatoid carcinoma 1 (lung), malignant lymphoma 1, unclassified 1. Conclusive diagnosis could be made in 16 cases, and histopathological diagnosis supported the diagnoses in 6 cases.

Conclusions

There are two procedures, cell-block and cell-transfer methods, available for immunocytochemistry of body fluid materials. Cell-block method is useful in case that cell-clot is obtainable after centrifugation, particularly in DMM cases. Extensive immunocytochemical study is possible using the cell-block methods as well as in immunohistochemistry. In the present study, 4 cases of DMM were able to be diagnosed by the cell-block method. In the diagnosis of DMM, it should be kept in mind that careful and intensive cytological examination including immunocytochemistry has to be performed in the initial aspiration.

(426 words)