ORIGINAL ARTICLE

Effect observation of exfoliative cytology combined with CEA, CA125, CA15-3 and CA19-9 examinations in the diagnosis of malignant serous effusion

Lizhi Yan*

Clinical Laboratory, Baogang Hospital, Baotou, Inner Mongolia, China

Received: January 30, 2019 **Accepted:** March 5, 2019 **Online Published:** March 10, 2019
DOI: 10.5430/dcc.v6n1p15 **URL:** https://doi.org/10.5430/dcc.v6n1p15

ABSTRACT

Objective: To study the effect of exfoliative cytology combined with CEA, CA125, CA15-3 and CA19-9 examinations on the diagnosis of malignant serous effusion.
Methods: 236 cases of patients who were diagnosed as serous effusion during inpatient in our hospital from January of 2015 to January of 2017 were selected as research objects. According to biopsy and pathological examinations, the diagnostic results were cleared that there were 136 cases of patients with benign serous effusion (benign group) and 100 cases of patients with malignant serous effusion (malignant group). Two groups of patients were both given exfoliative cytology combined with CEA, CA125, CA15-3 and CA19-9 examinations for tumor markers to analyze the effect of exfoliative cytology combined with CEA, CA125, CA15-3 and CA19-9 examinations on the diagnosis of malignant serous effusion.
Results: The levels of tumor markers CEA, CA125, CA15-3 and CA19-9 in the benign group were all lower than those in the malignant group, and the difference was of statistical significance ($p < .05$). In addition, exfoliative cytology combined with CEA, CA125, CA15-3 and CA19-9 examinations showed a higher sensitivity, specificity and accuracy than any of the above examinations alone, and the difference was of statistical significance ($p < .05$).
Conclusions: Exfoliative cytology combined with CEA, CA125, CA15-3 and CA19-9 examinations can effectively improve the diagnostic accuracy of malignant serous effusion and is worthy of being spread clinically.

Key Words: Exfoliative cytology, Tumor markers, Serous effusion

1. INTRODUCTION

Serous effusion generally can be made up of ascites, pleural effusion, joint fluid, pericardial effusion and so on.[1] The application of exfoliative cytology to the detection of serous effusion is considered as a diagnostic method for malignant serous effusion, but this method is of a poor sensitivity. The current cut-off value remains to be defined if taking tumor markers as diagnostic standards.[2] This research is designed to briefly analyze the effect of exfoliative cytology combined with CEA, CA125, CA15-3 and CA19-9 examinations on the diagnosis of malignant serous effusion. It is reported as follows.

2. DATA AND METHODS

2.1 General Information

236 cases of patients who were diagnosed as serous effusion during impatient in our hospital from January of 2015 to January of 2017 were selected as research objects. Accord-

*Correspondence: Lizhi Yan; Email: nmgbgyyyy@163.com; Address: Clinical Laboratory, Baogang Hospital, Baotou, Inner Mongolia 014010, China.

ing to biopsy and pathological examinations, the diagnostic results were cleared that there were 136 cases of patients with benign serous effusion (benign group) and 100 cases of patients with malignant serous effusion (malignant group). There was no statistically significant difference in the general information such as age and gender between two groups of patients ($p > .05$).

2.2 Methods

Exfoliative cytology examination: 10 ml of serous effusion was taken from each patient, centrifuged at the rotate speed of 1,000 r/min for 5 min and made into slices which were added by Wright-Giemsa stain. After air drying, the slices were analyzed in respect of the cellular morphology under an Olympus microscope to diagnose benign and malignant serious effusion. Tumor marker detection: 5 ml of venous blood (fasting blood) was taken from each patient to stand for 30 minutes and centrifuged at the rotate speed of 1,610 g for 10 minutes. CLIA (chemiluminescence immunoassay) was adopted to detect the levels of CEA, CA125, CA15-3 and CA19-9. Any one of standards such as CEA > 5 μl/L, CA15-3 > 31.5 μl/L, CA125 > 35 μl/L and CA19-9 > 36 μl/L can be used to diagnose a patient as malignant serous effusion.

2.3 Statistical methods

SPSS 20.0 software was applied to statistical analysis. The measurement data were represented by mean $\pm$ standard deviation, with t-test used. Chi-square test was performed to the categorical data, and the difference $p < .05$ was of statistical significance.

3. Results

From the comparison in tumor markers between two groups of patients: in the benign group, the average levels of CEA, CA125, CA15-3 and CA19-9 were (2.4 $\pm$ 1.8) μg/L, (42.3 $\pm$ 29.5) μg/L, (12.4 $\pm$ 11.3) μg/L and (22.1 $\pm$ 18.2) μg/L respectively; in the malignant group, they were (62.3 $\pm$ 44.7) μg/L, (442.9 $\pm$ 329.8) μg/L, (122.6 $\pm$ 81.9) μg/L and (421.1 $\pm$ 328.6) μg/L respectively. It can be concluded that the levels of four tumor markers in the benign group were all lower than those in the malignant group, and the difference was of statistical significance ($p < .05$). The sensitivity of detecting malignant serous effusion by use of exfoliative cytology was 77.4%, the specificity was 44.1%, and the accuracy was 40.5%; the sensitivity of detecting malignant serous effusion by use of tumor markers was 87.6%, the specificity was 84.1%, and the accuracy was 85.3%; the sensitivity by use of exfoliative cytology combined with tumor-marker examinations was 98.6%, the specificity was 99.4%, and the accuracy was 97.3%. It can be seen that the sensitivity, the specificity and the accuracy of exfoliative cytology combined with tumor-marker examinations are higher than those of any of the above examinations alone, and the difference was of statistical significance ($p < .05$).

4. Discussion

Exfoliative cytology examination is an important method of examination spread in clinical application. The examination results are of great value to the diagnosis of benign and malignant serous effusion and of great clinical significance for the diagnosis and prognosis of diseases.[3] Tumor markers are a series of markers which are used to detect the activity of tumors in the clinical laboratory. In addition, they can directly reflect the biological activity of tumors, and have distinctly auxiliary value in the diagnosis of tumors.[4] Exfoliative cytology combined with tumor-marker examinations for the detection of serous effusion can not only improve the sensitivity and the specificity of the detection for malignant tumors, but also significantly reduce false negative and false positive results, leading to the increase in the accuracy of the detection for malignant serous effusion. In conclusion, exfoliative cytology combined with CEA, CA125, CA15-3 and CA19-9 examinations can effectively improve the diagnostic accuracy of malignant serous effusion and is worthy of being spread clinically.

Conflicts of Interest Disclosure

The author declares no conflicts of interest.

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