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Applications of Telomerase Assay in Peritoneal Ascites — Diagnostic significance in Gynecologic malignancies

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Objective: With the knowledge that telomerase activity is found in the majority of human cancers, but not in most normal tissues, therefore, we designed the current investigation to measure telomerase activity in women peritoneal ascites to assess whether it suitable as an assistant tool for early detection of cancer.

Methods: Telomerase activity was measured by TRAP and RT-PCR assay in 23 female patients with gynecologic malignancies (18 ovarian cancer, 5 endometrial cancer). Appropriate control tissues including cytology or biopsy will be obtained from patients with non-gynecologic cancers and precanceous individuals. Human cervical cancer cell lines CaSki, HeLa, SiHa, MT-3, C4-I and C33-A cells have been obtained from American Type Culture Collection or ATCC and will be used to serve as both telomerase and HPV positive controls.

Results: Twelve of the 18 (66.7%) ovarian cancer and one of the 5 (20%) endometrial cancer were strongly positive for telomerase activity. Among them, 10 ovarian cancer patients and 1 endometrial cancer patients contained peritoneal positive washing cytology. Of the rest 2 telomerase-positive patients were negative for peritoneal cytology. Telomerase activity was not found, however, in either the 24 control individuals whom underwent laparotomy because of benign uterine leiomyoma.

Conclusion: Our preliminary results demonstrated a high correlation between telomerase assay versus histologic washing cytology. These results seem to suggest that the expression of telomerase may be a useful adjunct to cytopathological methods in the diagnosis of malignant peritoneal ascites.

Key words: Telomerase, peritoneal ascites, gynecologic malignancy, cytology.

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Pathology review in gynecologic oncology: A selection criteria

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To determine the effectiveness of our policy of routine pathology review (RPR) in gynecologic oncology and to identify the specimens with little or no risk of diagnostic error. **2) Methods** A retrospective study reviewing all referrals having RPR from 1993 to 1997, in a gynecological oncology unit. The referring and consulted diagnoses were compared. A discrepancy was major if it led to treatment alteration. A minor discrepancy was defined as differences without clinical consequences. The consultation error was determined by the final diagnosis and the subsequent pathologic material. The cost of pathology review was calculated by using the standard billing fee adjusted to 1998 dollars. Chi-square test and Fisher exact test were used for statistical analysis. **3) Results** 569 pathology specimens from 498 patients were analyzed in this study. The major discrepancy rate was 6.5% and the minor discrepancy rate was 12.5%. Cytological specimens accounted for no major discrepancy and 13 minor discrepancies as compared to 37 major and 58 minor discrepancies in histological specimens. The difference was statistically significant ($p=0.003$). The consulted diagnosis was significantly more accurate than the referring diagnosis (97.0% vs 80.1%; $p<0.001$). Majority of the consultation errors occurred in cases with no diagnostic discrepancy. The mean time from obtaining the slides to having the pathology report was 4.6 days (median 2 days). This was directly related to the number of slides being evaluated ($p=0.019$). We identified three types of specimens with little or no risk of diagnostic discrepancy: (1) cervical biopsy in cases with clinically gross tumors; (2) cervical smear and (3) peritoneal fluid cytology. In terms of clinical management, pathology review of these specimens is not necessary. The cost of finding each discrepancy was US$669. To find each major discrepancy, the cost was US$1953. If we excluded those 3 types of specimens, the cost for each major discrepancy would become US$1426. As a result, about one-fourth of the cost could be saved, with the accuracy of the consultation diagnosis remained at 96.4%. **4) Conclusions** Diagnostic accuracy could be improved by reviewing pathology slides in gynecologic oncology. Cervical biopsy specimens in cases with gross tumors; cervical smear and peritoneal fluid cytology, do not need routine pathology review. The cost could be reduced by one-fourth, without affecting the diagnostic accuracy and the patient care.