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Free peritoneal tumor cells detection in gastric and colorectal cancer patients

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Background: Free peritoneal tumor cells (FPTC) derive from the detachment of primary cancer and may result in peritoneal carcinomatosis. Since peritoneal lavage cytology has low sensitivity in detecting FPTC, our aim was to estimate the clinical relevance of FPTC detected using an approach based on multiple molecular techniques.

Materials and Methods: Samples of peritoneal lavage were collected from 27 gastric and 48 colorectal cancer patients. FPTC recovery and detection from peritoneal washes was performed by cytological examination and immunomagnetic enrichment for epithelial cells followed by immunofluorescence analysis for epithelial marker EpCAM/CD326 and carcinoembryonic antigen (CEA). CEA and CK20 mRNA levels were quantified using a real-time qRT-PCR system.

Results: For gastric carcinoma the FPTC positivity rate acquired by cytology, immunofluorescence and qRT-PCR was 14.8%, 14.8%, and 78% and for colorectal carcinoma was 0%, 17%, and 42%, respectively. qRT-PCR positivity was correlated with a poor cancer-specific survival and time-to-recurrence rates in both gastric and colorectal carcinoma.

Conclusions: Epithelial immunoenrichment and immunofluorescence analysis allows unequivocal identification of the FPTC. The real time qRT-PCR showed higher sensitivity for the detection of CEA and CK20 mRNA levels and confirmed its prognostic value in gastrointestinal cancers.

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