Intraoperative Peritoneal Lavage: Limitations of Current Evidence for Clinical Implementation

Duck-Woo Kim

Department of Surgery, Seoul National University Bundang Hospital, Seongnam, Korea

See Article on Page 266-273

Peritoneal recurrence after a curative resection of colorectal cancer is less common than lymphatic spread or hematogenous metastasis [1]. Moreover, peritoneal carcinomatosis often develops at a later stage of recurrent disease and is regarded as noncurable. Therefore, being able to predict the possibility of peritoneal recurrence at an early time after the original diagnosis and to prevent its occurrence would be a great advance in treating colorectal cancer [2].

Positive peritoneal lavage is a well-known risk factor for local/peritoneal recurrence in patients with colorectal cancer and various other types of cancers. Among gastrointestinal malignancies, the significance of peritoneal cytology has been extensively studied in gastric cancer. The existence of free cancer cells at intraoperative peritoneal lavage has been reported to be one of the most accurate prognostic factors for gastric cancer and is now classified as Stage IV [3, 4]. Besides gastric cancer, the examination of peritoneal free cancer cell is an important staging step in pancreatic, ovarian and endometrial cancer [5]

Although positive peritoneal lavage is an established poor prognostic factor in colorectal cancer that has been proven in many studies, including several systemic reviews and meta-analyses [3, 6, 7], examining the peritoneal cytology is still not a standard procedure for staging colorectal cancer. To be a reliable clinical indicator, future studies have to overcome several issues involving peritoneal lavage. The first is the differences in the methods of lavage and free cell detection. Proper timing of lavage is controversial. Some studies performed lavage immediately after the opening of

the abdominal wall and some so did after the tumor resection [7]. Most of these studies used a 0.9% NaCl solution as the lavage fluid, but the volume and the temperature of the solution were different from study to study. Most importantly, the methods for detecting free cancer cells varied and included conventional cytology, quantitative methylation specific polymerase chain reaction (PCR), immunological, immunobead quantitative PCR, radioimmunoassay or immunoperoxidase assay [8-12] methods. The staining technique was also different among the previous studies. These differences among the studies might result in a very wide range of positive peritoneal lavage ranging from 2.1% to 52%, and this wide range makes selecting a high-risk group for local/peritoneal recurrence based on peritoneal lavage difficult. Secondly, a well-designed comparative study is insufficient for recommending positive peritoneal cytology as a clinical indicator on which practical decisions can be based. A recent prospective study showed an improvement in peritoneal recurrence and overall survival in patients with positive lavage who underwent intraperitoneal chemotherapy with mitomycin C compared to those who did not [1, 13].

Because positive peritoneal lavage is associated with a worse prognosis, a potential benefit of peritoneal lavage may exist for the identification of patients to receive adjuvant treatment. Further studies are needed to examine whether adjuvant treatment can improve the oncologic results of patients with positive peritoneal lavage.

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Correspondence to: Duck-Woo Kim, M.D.

Department of Surgery, Seoul National University Bundang Hospital,
82 Gumi-ro 173beon-gil, Bundang-gu, Seongnam 463-707, Korea
Tel: +82-31-787-7101, Fax: +82-31-787-4078
E-mail: kdw@snuh.org

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