Editorial

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Scoring histological regression in peritoneal carcinomatosis: does it count?

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Much of the progress observed over the past decades in the survival of solid cancer is attributable to the introduction of multimodal treatment strategies encompassing, among others, neoadjuvant regimens followed by surgery. In these patients, assessment of histological response to neoadjuvant therapy offers essential predictive as well as prognostic information. In rectal cancer treated with neoadjuvant chemoradiotherapy, achieving a pathological complete response (pCR) reduces the hazard of recurrence or death by half [1]. Similarly, in patients undergoing surgery for liver metastasis after induction chemotherapy, several authors have confirmed the survival benefit associated with a pCR [2]. However, the evaluation of treatment induced histological changes is not a sinecure, and several different grading systems have been used. The grading system proposed by Rubbia-Brandt seems to be the most accurate, since it evaluates the extent of necrosis, fibrotic changes, and the amount of residual cancer cells [3]. Others have suggested that the percentage of tumor cells multiplied by the size of each separate nodule offers even better discriminatory performance in colorectal liver metastases [4]. In parallel with the expanding use of perioperative chemotherapy in liver metastases, patients with colorectal peritoneal carcinomatosis (PC) are increasingly offered neoadjuvant chemotherapy [5]. Little is known on the assessment of pathological response and its prognostic value in this specific disease setting. Passot and coworkers observed a pCR in 10% of patients undergoing CRS and HIPEC after neoadjuvant chemotherapy with or without biologicals; five year overall survival was 75%, 57%, and 13% in patients with complete, major, or minor pathological response respectively ($p = 0019$) [6].

The assessment of pathological response of peritoneal malignancy is an essential aspect of the recently introduced method of laparoscopy assisted intraperitoneal aerosol delivery of chemotherapy (PIPAC) [7]. Contrary to intraoperative (hyperthermic) chemoperfusion, PIPAC can be repeated at 6–8 weeks intervals, allowing to determine treatment benefit or futility by means of morphology (number, size, and aspect of peritoneal implants) and histological analysis. Due to the significant heterogeneity in number, size, anatomical distribution, and invaded tissue type (abdominal wall versus abdominal organ structure) reliable assessment of histological treatment response is by no means easy. In this issue of the Journal, Solass and coworkers propose a four tier Peritoneal Regression Grading Score (PRGS) that allows to maximize staging accuracy in individual patient treatment, and facilitates multicentric study efforts by using a uniform terminology and staging system [8]. The proposed scale ranges from 1 (complete response) to 4 (no response), and is based on typical histological features of regression including fibrotic changes, necrosis, and presence of acellular mucin deposits. Importantly, the authors recommend to sample all four abdominal quadrants (whenever possible) with several (≥ 4) punch biopsies, and to report the median and worst value whenever different scores arise for different samples. The availability of a common, shared nomenclature and staging system to assess pathological response in PC will undoubtedly improve decision making and allow pooling and comparison of institutional experience. Although the reproducibility and prognostic significance of the PRGS remain to be validated in uniform datasets, adoption of this common standard by the broad oncology community interested in PC management will undoubtedly accelerate further progress in this challenging field.

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