

Peritoneal Cancer Index by CT Scan

Introduction: The Peritoneal Cancer Index (PCI) determined at the time of surgical exploration has been shown to be an important prognostic indicator in peritoneal mesothelioma and peritoneal carcinomatosis from gastrointestinal origin. The PCI has been used to assist on patient selection for cytoreductive surgery and hyperthermic intraperitoneal chemotherapy. Evaluating the possibility of measuring this important parameter on CT scan prior to surgery constitutes the basis of this study.

Materials and Methods: A prospective determination of the PCI by CT scan was recorded prior to surgery in all patients with peritoneal surface malignancies treated between November 2005 and July 2006. The PCI was determined by dividing the abdomen and pelvis into 13 regions (0-12) and assigning a lesion size score to each region. The lesion size score varies from 0 if no tumor is present, to 3, if tumor greater than 5cm is present. The PCI, the summation of all lesion size scores, can vary from 0 to 39 (see diagram). At the time of the surgery, an intraoperative PCI was determined. Using a student's t-test, a comparison between the PCI by CT scan and the PCI at surgery as well as the lesion size score for each of the 13 regions was performed.

Results: There were 28 patients. The mean Peritoneal Cancer Index by CT scan was 20.39 (SD 13.4) and the mean PCI at the time of surgery was 23.93 (SD 11.7). The means were not statistically significant with a p-value of 0.29 (95% CI: -10.3 to 3.2). Upon evaluating each region independently, only the central region (abdomino-pelvic region 0) was shown to be statistically significant with a mean lesion size score of 2.07 by CT scan versus 2.64 at exploration, $p = 0.04$ (95% CI: -1.12 to -0.02).

Conclusion: These data suggests that the reading of CT scans on patients with peritoneal surface malignancies should include a PCI determination. In addition, it helps to validate the PCI by CT scan as a surrogate of the intraoperative PCI, therefore assisting in proper patient selection for cytoreductive surgery and hyperthermic intraperitoneal chemotherapy.