

AB075. Perioperative cell free DNA trends predict recurrence of non-metastatic colorectal cancer significantly earlier than cea trends over the first two years post-operatively

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Background: Changing trends (delta) in carcinoembryonic antigen levels (delta CEA) is accepted as a sensitive marker of disease recurrence following curative resection for colorectal cancer. Our group has previously shown that perioperative cell free DNA (cfDNA) changes (deltacfDNA) are also prognostic. In this study we aimed to compare the diagnostic accuracy of perioperative deltaxcfDNA to deltaCEA over the first two years post-operative for identifying disease recurrence.

Methods: Consecutive patients presenting for elective resection of colon cancer with curative intent were screened for inclusion. Perioperative cfDNA levels were measured at seven difference times points (pre-operative and post-operative at 3 hours, 6 hours, 24 hours, 48 hours, POD3 and POD5). CEA levels were measured on the same patients up to two years post-operatively. Change in trend was defined as the β co-efficient using a logistic regression

model. Statistical analysis was performed using SPSS, version 23.

Results: Longitudinal data on twenty patients was analysed (n=15 male, n=5 female) for a median of 28 months (IQR 22 months) during which time three patients developed (distant) recurrence. Perioperative deltaxcfDNA was significantly associated with early recurrence at 48 hrs, POD3 and POD5. deltaCEA was significantly associated with early recurrence at 6months, one year and two years post-operatively, only when disease recurrence was macroscopically established. deltaxcfDNA was associated with an area under the curve (AUC) of 0.947 (95% CI: 0.88–1.0, P<0.001) and deltaCEA was associated with an AUC of 0.9382 (95% CI: 0.88–0.99, P<0.0001). This translated into a specificity of 97% (95% CI: 86.51–99.87%) for deltaxcfDNA and 77.5% sensitivity (95% CI: 62.5–87.7%) in the immediate perioperative period and a 88.9% specificity (95% CI: 56.5–99.4%) and 76.5% sensitivity (95% CI: 63.24–86%) for deltaCEA over the first two years post-operatively.

Conclusions: In this pilot study, following curative resection for colon cancer changing trends in perioperative cfDNA identifies those at risk of recurrent disease before recurrence develops which is at least six months earlier than CEA changes which are only observed when recurrence is established.

Keywords: Cell free DNA (cfDNA); colorectal cancer; perioperative; surveillance

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