Circulating tumor cells correlate with poorer survival in pancreatic cancer patients

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Fox Chase Cancer Center investigators find that pancreatic cancer patients who have circulating tumor cells tend to have worse outcomes than patients without circulating tumor cells. Additionally, the team has uncovered evidence that not all circulating tumor cells are the same, and some may predict worse outcomes than others.

Benjamin P. Negin, M.D., a medical oncology fellow at Fox Chase, will present the study at the 46th Annual Meeting of the American Society of Clinical Oncology on Sunday, June 6.

"Eventually, we hope we can use changes in number of circulating tumor cells to make real-time treatment decisions, instead of having to wait weeks for radiological scans," says Negin. "This is one of the first studies looking at the role of circulating tumor cells in pancreatic cancer ."

Previous work has demonstrated that prostate, colon, or breast cancer patients who have more circulating tumor cells have poorer survival than patients with fewer circulating tumor cells. To learn whether a similar scenario occurs in pancreatic cancer patients, Negin and colleagues enrolled 48 patients with pancreatic cancer in the current study (additional patients still being added).

The team used an immunomagnetic separation system to isolate circulating tumor cells from patients' blood at three time points. The time points included study entry, seven days after the start of therapy,

and at the time of their first radiological evaluation, which was six to ten weeks after initiating therapy.

The team found that 50% of the patients had one or more circulating tumor cell per 7.5 mL peripheral blood at baseline. That proportion decreased to 40% after seven days of therapy and to 32% at the time of the first scan.

In addition, the presence of circulating tumor cells correlated with patient outcomes. Patients with circulating tumor cells at study entry had a median overall survival of 191 days compared with 269 days for those without circulating tumor cells, although the difference did not reach statistical significance in the small study population. A similar trend appeared for progression-free survival, with a median of 85 days for those with detectable circulating tumor cells compared with 137 days for those without.

Patients who had circulating tumor cells at either point after therapy initiation also trended towards poorer overall or progression-free survival.

Interestingly, the investigators found that some circulating tumor cells may be worse than others. Patients whose circulating tumor cells expressed the MUC1 protein, which has been associated with more aggressive pancreatic cancer, trended towards a shorter median overall survival than those whose circulating tumor cells did not express the protein, at 85.5 and 310 days, respectively.

"We find that having circulating tumor cells is bad," Negin says. "But the more interesting story that appears to be coming out of our study is that not all circulating tumor cells are equal. The MUC1 cells seem particularly bad, suggesting that there is a difference in the biology of these tumors and providing some insight into how these tumors

function."

Provided by Fox Chase Cancer Center