A paracrine pathway regulates pancreatic cancer cell invasion

13 January 2010

Pancreatic cancer cell invasion along nerves is regulated by a paracrine pathway that involves glial cell-derived neurotrophic factor, which may be a possible target for preventing the invasion, according to a new study published online January 12 in the *Journal of the National Cancer Institute*.

To better understand how pancreatic cancer cells infiltrate nerve cells, Ziv Gil, M.D., Ph.D., of the department of otolaryngology, head and neck surgery, at Tel Aviv Sourasky Medical Center in Israel, and colleagues used an in vitro Matrigel dorsal root ganglion and pancreatic cancer cell coculture model to assess the interaction between nerves and cancer cell migration, as well as the role of glial cell-derived neurotrophic factor.

The researchers found that the migration of tumor cells along nerves was more rapid than that in the absence of nerves, and the secretion of glial cell-derived neurotrophic factor induced the migration. Mice treated with an inhibitor of the pathway had reduced nerve invasion. Also, tumors from patients with pancreatic cancer that had invaded nerves expressed more factor receptors than normal tissue.

The authors write: "Treatment directed against neural invasion could theoretically prevent the local extension of cancer to the central nervous system, preserve nerve function, reduce neuropathic pain, and prolong survival. Such treatment might, in the future, be offered as an adjuvant therapy to enhance conventional therapy for pancreatic cancer."

Study limitations: The generalizability of the findings of the mouse and tissue culture to human disease is unknown. The in vitro and in vivo models used did not encompass all of the possible interactions between cancer cells and nerves.

Provided by Journal of the National Cancer Institute