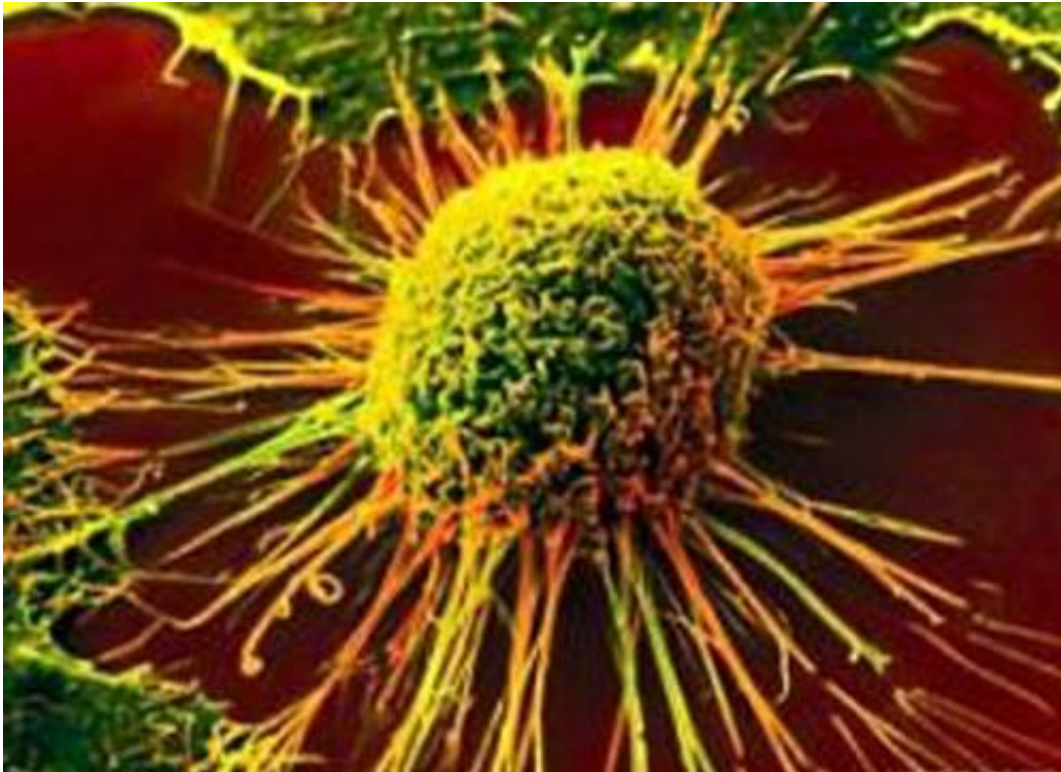


New clue to how cancer causes organ failure

June 18 2015



Cancer produces a variety of collateral effects in patients beyond the malignancy itself, including threats to distal organ functions. However, the basis for such effects, associated with either primary or metastatic tumors, are generally poorly understood. New findings from a research group at Uppsala University show that the neutrophil, a type of blood cell, plays an important role in this process.

The main function of neutrophils is to protect us from infections, but the presence of a tumor in the body can trick these immune cells to fight an infection that does not exist. This is caused by substances secreted by the tumor that activates neutrophils to form "NETs" (Neutrophil Extracellular Traps). These NETs are formed in a spectacular way when [neutrophils](#) externalizes their DNA and together with platelets forms a meshwork that can trap bacteria – an immune reaction that can be crucial during sepsis.

In a newly published article in *Cancer Research*, researchers at the Department of Medical Biochemistry and Microbiology show that NETs accumulate in the peripheral circulation in mice with cancer and causes decreased functionality of blood vessels and inflammation in organs not affected by the actual tumor or metastatic tumor cells.

Since NETs have a high content of extracellular DNA, they can be dissolved by DNase treatment. DNase treatment restored the vascular function in the kidney or heart to levels seen in non-tumor-bearing mice, and also suppressed the inflammatory response.

"Taken together, our findings strongly suggest that NETs mediate the negative collateral effects of tumors on distal organs, but that this condition is reversible. We believe that these findings may add new knowledge to how [cancer patients](#) should be treated to avoid organ failure", says Anna-Karin Olsson, senior lecturer at the Department of Medical Biochemistry and Microbiology, Uppsala University.

More information: "Neutrophil Extracellular Traps Accumulate in Peripheral Blood Vessels and Compromise Organ Function in Tumor-Bearing Animals," *Cancer Research*, [DOI: 10.1158/0008-5472.CAN-14-3299](#)

Provided by Uppsala University

Citation: New clue to how cancer causes organ failure (2015, June 18) retrieved 20 April 2024 from <https://medicalxpress.com/news/2015-06-clue-cancer-failure.html>

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