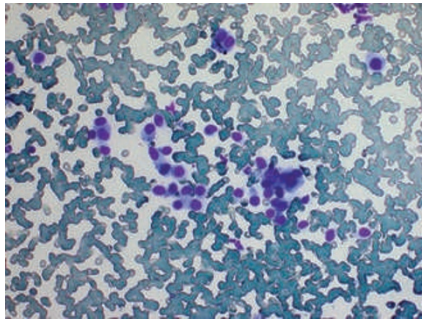


## DIAGNOSIS

## Novel anti-seeding technology to prevent dissemination of tumor cells after a fine-needle aspiration biopsy

A biopsy can provide a conclusive diagnosis of suspected malignancy. However, tumor-cell dissemination is a recognized complication that can occur during the biopsy procedure, which could be a concern if the tumor is aggressive. To prevent this potential complication, Hans Wiksell and colleagues have developed an anti-seeding technique that denatures tumor cells in the needle track. The device consists of a control console and a specially designed anti-seeding needle. "A miniaturized accelerometer is used to detect the needle movements, triggering computer-controlled energy pulses," explains Wiksell. Radiofrequency pulses are delivered to the tissue directly surrounding the needle as it is passed through the lesion and its blood vessels.

A routine fine-needle aspiration biopsy (FNAB) was carried out in 88 patients with breast cancer. Subsequently, 31 of these patients had a second needle biopsy in a different location using the



Courtesy of Hans Wiksell, Karolinska Institute, Sweden

anti-seeding device. Blood and secretion droplets emerging from the skin orifice were stained and analyzed. "We tested if tumor cells could be detected in blood following tissue sampling," says Wiksell.

After routine FNAB, tumor cells were present in blood samples of 74% of patients. By contrast, tumor cells were only detected in one of the 31 samples (3%) when the anti-seeding device was employed. However, none of the tumor cells in the positive sample from the

anti-seeding device were judged to be morphologically well preserved. "Our experience with anti-seeding on breast cancer so far is that pain remains low, tissue samples are not degraded, bleeding is decreased, and there are no viable tumor cells left in the external blood after the biopsy is taken," comments Wiksell. The procedure was safe and no complications were reported. The authors anticipate that the radiofrequency pulses will have effects on the dissemination of tumor cells into the blood and lymphatic vessels. "The next research step is to investigate in a prospective study the anti-seeding device in other malignant tumors, as well as adapt the technique for core-needle biopsy," says Wiksell.

*Helene Myrvang*

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