Contrast-Enhanced Ultrasound: a New Method for Sentinel Lymph Node Detection in Melanoma

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Pilot study on pigs with melanoma

1. Ultrasound contrast and vital blue dye are both injected around the skin lesion.

2. Ultrasound is used to find the lymph channel draining from the skin lesion.

3. The lymph channel (arrowheads) is followed until the first draining lymph node (the SLN) is found (arrows).

4. The lymph node is removed. The appearance of the channel (arrowheads) and node (arrow) stained with blue dye corresponds with the appearance seen on CEUS.

Background: Melanoma

- The most serious type of skin cancer
- 145,000 cases per year in the U.S.
- One of the few cancers continually increasing in frequency over the past few decades
- The first draining lymph node of a cancer is called the sentinel lymph node (SLN). Surgical removal of the SLN is a very important part of staging melanoma, but it is not always easy to detect the SLN confidently.

Melanoma on the flank of a pig

Conclusions and Future Directions

- For SLN detection, CEUS with perfluorobutane is as sensitive, and is more specific, than the current technique of vital blue dye.
- The next step will be to evaluate this new technique in human patients.
- Once evaluated in melanoma, it can also be potentially applied to other cancer types, such as other skin cancers and breast cancer.

Background: Contrast-Enhanced Ultrasound (CEUS)

- Ultrasound contrast is composed of microbubbles of inert gas.
- The contrast used in this project, perfluorobutane (Sonazoid, GE Healthcare), is unique in that it is taken up by cells of the lymph system, creating better images of lymph nodes and their channels.

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