Let us utilize breast contrast-enhanced ultrasound more

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The results of phase 2 and phase 3 clinical studies of contrast-enhanced ultrasound with Sonazoid (perflubutane) showed that it was significantly superior to B-mode ultrasound and contrast-enhanced MRI for diagnosis of malignancy [1, 2]. If benignity can be diagnosed with contrast-enhanced ultrasound, more invasive intervention such as needle biopsy can be avoided. Conversely, intervention is necessary if contrast-enhanced ultrasound shows a malignant pattern even if B-mode ultrasound or other modalities suggest a diagnosis of benignity.

The utility of breast contrast-enhanced ultrasound for diagnosing malignancy has been investigated, and it has been available for imaging of breast mass lesions since 2012, but it is not necessarily being fully utilized in everyday clinical practice. Contrast agents are being used without resistance in the case of CT and MRI, but when it comes to use of ultrasound contrast agents, they appear to be underutilized, perhaps due to the need for involvement of a busy breast surgeon. One solution to further facilitate use of contrast-enhanced ultrasound may be to make structural changes such as allowing nurses to intravenously administer contrast agents. Evidence has been established for diagnosis of liver masses using contrast-enhanced ultrasound, but evidence has not yet been established for diagnosis of breast cancer extent. If evidence is found for diagnosis of breast cancer extent using contrast-enhanced ultrasound, we can expect to see more widespread use of contrast-enhanced ultrasound. The incidence of adverse events caused by Sonazoid is extremely low. Hence, it can be used in patients with coexisting renal impairment and those who are allergic to the contrast agents used for other modalities. There are currently many commercial ultrasound units that are equipped with a Sonazoid-based contrast-enhanced mode, allowing

for contrast-enhanced ultrasound imaging by simply confirming the settings in advance.

Since imaging with Sonazoid takes place under mid to low acoustic power (mechanical index), imaging can be performed over a relatively long period of time. If contrast-enhanced ultrasound can be applied to diagnosis of the extent of cancer for the purpose of determining the extent of resection as part of qualitative diagnosis, it would be extremely useful for determining the surgical margin for resection in breast cancer surgery. Although it is difficult to perform MRI and CT in the operating room, ultrasonography can be easily performed in the operating room, making it superior to other modalities in terms of its real-time nature. MRI is performed with the patient in the prone position, which differs from the position during surgery, but scanning can be done in the position the patient is in during surgery in the case of ultrasound, which may allow for more accurate determination of the surgical margin for resection. It may be possible to predict the extent of breast cancer for lesions suspected on B-mode to have spread by evaluating minute blood flow using contrast-enhanced ultrasound.

Based on analysis of the benefit–harm balance, it is recommended that diagnosis of the extent of breast cancer by MRI be performed prior to surgery. If contrast-enhanced ultrasound is eventually recommended in the clinical practice guidelines, etc., the importance of ultrasonography will increase further, and use of contrast-enhanced ultrasound will become more widespread.

Going forward, I hope that we will see more widespread use of contrast-enhanced ultrasound, which is an extremely beneficial modality for physicians involved in the diagnosis and treatment of not only breast cancer patients, but also other patients with breast-related disorders.

We have seen a marked increase in the number of submissions to our English-language journal, and I hope that the number of breast-related submissions increases in a similar manner.

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