Research Center for Medical Sciences Division of Ultrasound Device Development and Application

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General Summary

1. Theoretical studies of the mutual relationship of ultrasound and microbubbles
Microbubbles are considered an ultrasound contrast agent and enhancer and have come to play an important role. So that microbubbles are used more effectively and rationally, we have employed the finite-element method and the mesh-free method and have studied various types of simulation of the behavior and the effect of microbubbles in the ultrasonic field.
2. Visualization studies of the *in-vivo* ultrasonic field with magnetic resonance imaging
We hope the realization of the monitor of the ultrasonic wave propagation situation to such cheap magnetic resonance imaging equipment human body. We believe that the ultrasonogram has much potential and will become a safer therapeutic medical device.
3. Nanobubbles, molecular imaging research
We have collaborated with the Department of Biochemistry and the Department of Laboratory Medicine (The Jikei University) and the Tokyo University of Science. By using the original nanobubbles, we have studied d– d– s– and cancer treatment and have a plan of in vivo study.
4. Study of breast ultrasound diagnosis using machine learning
The subjects of this study were ultrasonic images of the breast that have resulted in a pathological diagnosis. The images have been input to a computer installed in the research department to develop ultrasonic applications and have been used as teaching images (images with the answer) for machine learning with a computer. By the analysis by entering the image data collected developed machine learning.