Norio Tagawa et al., OMICS J Radiol 2016, 6:5(Suppl)
http://dx.doi.org/10.4172/2167-7964.C1.010

Development of ultrasound breast imaging system using mechanically rotated ultrasonic probe

Norio Tagawa, Takasuke Irie and Masakazu Sato
Tokyo Metropolitan University, Japan

In recent years, early detection and diagnosis of a breast cancer are very important medical problems. To date, both ultrasound imaging and mammography are used as a diagnosis method of breast cancer. Mammography diagnosis uses x-ray radiation to capture images of mammary glands. Therefore, frequent applications are not preferable. In this study, we have made an examination of ultrasound diagnosis with little harm for human body. The equipment for ultrasound diagnosis has been recently developed by a part of authors. This equipment has the automatic control system to rotate an ultrasonic probe mechanically and to acquire images automatically. The process for imaging mammary glands is as follows; first, the ultrasonic probe is rotated around a nipple on a breast to capture the B-mode images in the inner part of a breast. Next, the probe is rotated apart from a nipple to image the outer part of a breast. The collected B-mode images are integrated by the attached computer. A whole cross-sectional breast image of each direction is constructed by connecting laterally the four cross-sectional B-mode images measured and collected by the above-mentioned way while giving appropriate angles which are computed so that the mammary glands are shown clearly in the B-mode images and are connected smoothly across the boundary. By generating the whole cross-sectional images in all directions, 3-D volume data is constructed. Afterwards, arbitrary cross sections can be viewed by cutting out the corresponding date from the 3-D volume data, for example, C-mode imaging, which is expected to be very useful for effective diagnosis of a cancer.

Biography

Norio Tagawa has received the ME degree from Tokyo Institute of Technology in 1989 and the DE degree from Tokyo Metropolitan University in 1995. He joined Fujitsu Laboratories Ltd. in 1989, and now a Professor in the Graduate School of System Design, Tokyo Metropolitan University. His research interests are in Computational Vision and Medical Ultrasound Engineering.

tagawa@tmu.ac.jp

Notes: