

IN VIVO AND IN VITRO STUDIES OF APPLICATION OF ULTRASONIC
VISUALIZATION TECHNIQUES FOR DETECTION OF BREAST CANCER

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This paper is concerned with the results of a long-term study of the feasibility of using ultrasonic techniques for the detection of breast cancer. A B-scan (sector) visualization system with an on-line digital computer was used.² The computer not only provides the advantage of an automatic scanning system but also allows the operator to control the gain of the receiver amplifier so that it is optimal for specified range intervals in the tissue. The approach used was to initially obtain visualization data on the breast of normal subjects covering the age range of young to old, and to then apply this information as a basis of interpretation of data obtained on subjects with benign and malignant breast pathologies. In addition, in vitro visualization studies were carried out on excised whole breast. The data revealed in the echograms of the excised whole breast were correlated with information provided by histological studies of whole breast sections.

A number of apparently significant results accrued from this study but one of the most important is the finding that there is a difference between the characteristics of malignant tumors located in breast, insofar as acoustic visualization is concerned, and the characteristics of malignant tumors located in soft body tissues other than breast, such as brain tumors.

- 1 H. Stephen Gallager, M.D.; M. D. Anderson Hospital, Houston.
2 W. J. Fry, et. al., JASA 44(5): 1324-1338, 1968.
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