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Value of Electrical Impedance Scanning (EIS) of the female breast as a predictor of malignancy in 217 preoperative/pre-mammotome patients

Purpose:

To evaluate Electrical Impedance Scanning (EIS) with a new software in the prediction of malignancy.

Materials and Methods:

217 patients (2/3 preoperative, 1/3 pre-Mammotome) were prospectively examined with Electrical Impedance Scanning (EIS). The actual software includes a scaling of lesions from 1 (surely benign) up to 5 (highly suspicious). Results of EIS were compared

with mammography and histology.



Fig. 1a

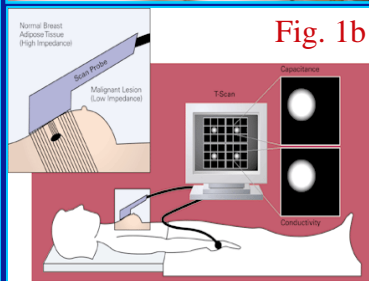


Fig. 1b

Results:

Overall sensitivity of EIS was 74 % and specificity 40% (73 TP, 48 TN, 72 FP, 24 FN) as compared to mammography with 91% and 62 % respectively . Sensitivity and specificity of EIS didnt differ for the different histologic differentiations (ID-Ca 45/61, IL-Ca 13/16) neither for the degree of invasion (DCIS 12/16). Most frequent lesion type for false positives were mastopathy (26/49 FP) and fibroadenoma (12/20 FP). Also the presence of spots didnt show a correlation to malignancy.

There were strong differences regarding the tumor size: While EIS correctly diagnosed 90% of lesions < 10 mm, only 69% of lesions >10 mm were detected. Patient acceptance of EIS was perfect and there were no drop outs because of movement artifacts.

Conclusion:

The new software clearly improved the clinical performance of EIS. Especially the high sensitivity of EIS in small cancers represents an important advantage of this method, so that it may become an valuable additional tool like sonography.

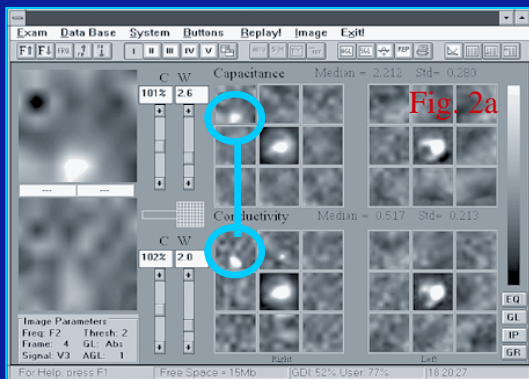


Fig. 2a

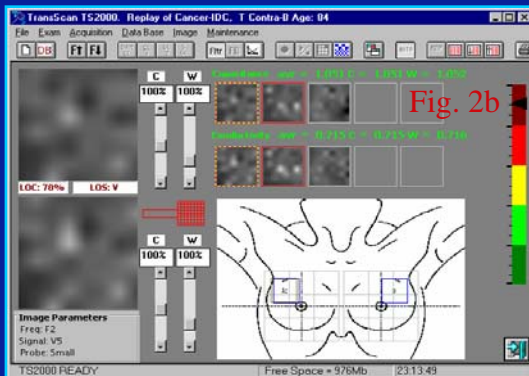


Fig. 2b

Fig.1a/b: Transscanexamination
Fig. 2a: Previous Transscan exam software
Fig. 2b: Actual Transscan exam software
Fig. 3: Measurement values of 100 histologically proven lesions for the new software.

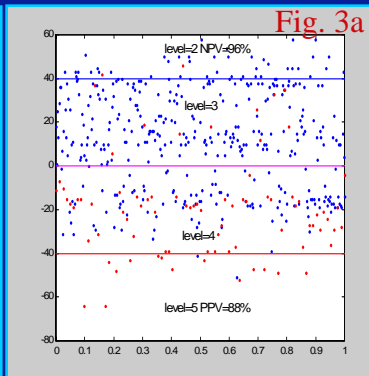


Fig. 3a