

Evaluating the Capability of Thermal Imaging System in Identifying Some of the Breast Tissue Diseases

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Abstract

Introduction: The temperature of human body can be indicative of a natural basis to detect some diseases. Applying Thermal imaging (thermography) through the infrared method is a fast, non-invasive, non-contact, rapid, non-invasive, non-contact and flexible method for monitoring body temperature. The purpose of this study is to determine the diagnostic value of thermal imaging in the detection of some diseases of the breast tissue.

Methods: This study has adopted cross-sectional research methodology, that it applied non-contact infrared camera INFREC R500 for evaluating the capabilities of thermography. The study was conducted on 60 patients suspected of breast tissue disease, which were referred to Imam Khomeini Imaging Center. Information obtained from the questionnaires and the performed clinical examinations along with the obtained diagnostic results from ultrasound images, biopsies and thermography, were analyzed by the respective experts.

Results: The analysis of the results indicated that the use of Thermography along with the asymmetry technique is useful in identifying hypoechoic, and cystic masses. It should be noted that the patient should not suffer from breast discharge. The accuracy of asymmetry technique identification is respectively 91/89% and 92/30%. Also accuracy of exact location identification is on the 61/53% and 75%. It is also effective on identifying heterogeneous mass, fibroadenoma, and intra-ductal masses. But it is unable to identify isoechoic and calcified mass.

Conclusion: According to the results of the investigation, Thermography is useful in the initial screening and supplementation of diagnostic procedures due to its safety (its non-radiation property), low cost and the exact recognition of diseases of the breast tissue.

Keywords: Thermography, Biopsy, Breast Cancer.