Use of electrical impedance scanning in the differentiation of sonographically suspicious and highly suspicious lymph nodes of the head-neck region.

Institute of Diagnostic and Interventional Radiology, Friedrich-Schiller-University Jena, Bachstrasse 18, 07740 Jena, Germany. angar.malich@med.uni-jena.de

Abstract
Sonographic differentiation between inflammatory and malignant lymph nodes is difficult, due in part to almost unchanged morphology of small lymph node metastases; however, as cancer cells exhibit altered dielectric properties, measurement of local electrical field distortions may be useful as adjunct to ultrasound in detection of malignancy. In this study, we evaluated the ability of electrical impedance scanning (EIS) to differentiate cervically located sonographically suspicious or highly suspicious lymph nodes. Seventy patients with 106 sonographically suspicious lymph node metastases (mean size 20 x 13 x 13 mm, mean depth 8 mm) were examined using TransScan TS2000 (Siemens, Erlangen, Germany; manufactured by TransScan Research and Development Co., Israel). Included in the study were cervical (n=64), inframandibular/periparotideal (n=32) and nuchal/supraclavicular (n=10) nodes. The EIS results were compared with histopathological (n=100) and serological (n=6) findings. Sixty-two of 64 malignant lymph nodes were correctly detected using EIS. 19 of 42 inflammatory/benign lymph nodes were correctly identified as benign (true positive 96.9%, true negative 45.2%; accuracy 71.3%, negative predictive value 90.5%, positive predictive value 59.6%). The high tumour detection rate achieved in this study suggests that EIS may be of value as an adjunctive technique in differentiation of lymph nodes of the head-neck region. Software changes to reduce the high number of false-positive markers are, however, necessary to improve the value in the evaluation during a regular clinical routine.

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MeSH Terms

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