エラストグラフィーは皮膚がんを正確に見極める（Abstract# SSJ14-04）

エラストグラフィーを用いた超音波画像により皮膚の悪性腫瘍と良性腫瘍が鑑別された

Malignant tumors differentiated from benign skin conditions by ultrasound with elastography

エラストグラフィー付き高周波超音波は皮膚のがんと良性腫瘍を鑑別するのに役立つと2009年Radiological Society of North America学会（RSNA 2009）で発表された。エラストグラフィーは、病変を見た目ではなく弾力性や硬さを計測することにより鑑別することで知られている。このスタディにおいて、超高周波超音波装置を用いて様々な悪性および良性皮膚病変を有する患者40人の画像検査を施行した。悪性腫瘍には扁平上皮細胞がん、基底細胞がんおよびメラノーマが含まれた。良性病変は皮膚線維腫および脂肪腫であった。研究者らは正常皮膚と隣接した皮膚病変との弾性の比を計算し、検査解析を行い診断を確認した。悪性ではない嚢胞病変は弾性が高く、一方悪性病変は有意に弾性が低かった。正常皮膚と様々な皮膚病変との弾性比は嚢胞病変の0.04～0.3から悪性病変の10.0以上と幅があった。さらに、エラストグラフィー付き高周波超音波により皮下病変の広がりおよび深達度が正確に分かり、医師が治療する際に役立つ。

Full Text

High-frequency ultrasound with elastography can help differentiate between cancerous and benign skin conditions, according to a study presented at the 2009 annual meeting of the Radiological Society of North America (RSNA).

"High-frequency ultrasound with elastography has the potential to improve the efficiency of skin cancer diagnosis," said lead author Eliot L. Siegel, M.D., vice chairman of the Department of Radiology at the University of Maryland School of Medicine (UMSM) in Baltimore. "It successfully delineated the extent of lesions and was able to provide measurable differentiation among a variety of benign and malignant lesions."

Suspicious skin lesions are typically diagnosed by dermatologists and biopsied based on their surface appearance and characteristics. Unfortunately, even to experienced dermatologists, benign and malignant lesions often appear similar visually and on physical examination, and some malignant lesions may have a benign appearance, especially in their early stages. It is not uncommon for patients to have one or more lesions that appear concerning.

"Dermatologists tend to biopsy any lesions that seem visually suspicious for disease," said coauthor Bahar Dasgeb, M.D., from the Department of Dermatology at Wayne State University in Detroit and Pinkus Dermatopathology Lab in Monroe, Michigan. "Consequently, many benign lesions are needlessly biopsied in order to avoid the risk of missing a potentially deadly melanoma."

Elastography was found to distinguish between benign and malignant lesions not by their visible appearance but by measuring their elasticity or stiffness. Since malignancies are stiffer than benign growths, elastography, when added to high-frequency ultrasound imaging of the skin, has potential to improve the accuracy of traditional clinical diagnosis of skin cancers and, in some cases, eliminate unnecessary biopsies of benign skin lesions. The procedure is noninvasive, convenient and inexpensive.

For the study, researchers used an ultra high-frequency ultrasound system to image 40 patients with a variety of malignant and nonmalignant skin lesions. Malignant tumors included squamous cell carcinoma, basal cell carcinoma and melanoma. Benign lesions included dermatofibroma and lipoma.

The researchers calculated the ratio of elasticity between normal skin and the adjacent skin lesion, and used laboratory analysis to confirm their diagnoses. Cystic lesions, which are not malignant, demonstrated high levels of elasticity, while malignant lesions were significantly less elastic. The elasticity ratio of normal skin to the various skin lesions ranged from 0.04 to 0.3 for cystic skin lesions to above 10.0 for malignant lesions.

In addition, high-frequency ultrasound with elastography allows for accurate characterization of the extent and depth of the lesion below the surface, which can aid physicians in treatment.

"The visualized portion of a skin lesion can be just the tip of the iceberg, and most dermatologists operate 'blindly' beyond what they can see on the surface," Dr. Siegel said. "High-frequency ultrasound provides almost microscopic resolution and enables us to get size, shape and extent of the lesion prior to biopsy."

TOPICS