Elastography findings of encapsulated solid papillary carcinoma of breast in a man

Işıl Başara Akın¹, Hakan Abdullah Özgül¹, Duygu Gürel², Süleyman Özkan Aksoy³, Pınar Balcı¹

¹Department of Radiology, ²Department of Pathology, ³Department of General Surgery, Dokuz Eylül University School of Medicine

Abstract
Encapsulated solid papillary carcinoma (ESPC) is one of the malignant papillary lesions and classified it as ductal carcinoma in situ. Radiologic features of ESPC have been reported in the literature many times. However, to our best knowledge US elastography findings of ESPC have not been reported in the published literature yet. In this case report, we present US elastography findings of ESPC.

Keywords: elastography; breast; solid papillary carcinoma; men

Introduction
Breast papillary lesions are a group of lesions consisting of different lesions changing from benign to malignant [1,2]. One of the malignant papillary lesions is encapsulated solid papillary carcinoma (ESPC) [3], a low-grade tumor which originates from dilated ducts [2,4] and defined as neuroendocrine differentiation showing endocrine ductal carcinoma in situ [4]. Additionally, the World Health Organization (WHO) classified this tumor as a ductal carcinoma in situ (DCIS). Less than 1% of breast carcinomas are ESPCs [3]. It is usually more common in elderly women than men [2,4]. Radiologic features of ESPC have been reported in the literature many times [5-8]. However, to our best knowledge, ultrasound (US) elastography findings of ESPC have not been reported yet.

We present the imaging evidence of ESPC diagnosed in a man, which is the first case presented in the literature in terms of US elastography.

Case report
A 72-year-old man with a palpable right breast mass since 6 months was evaluated at a general surgery outpatient clinic. A painless, mobile lesion at the retroareolar region of the breast was found and the patient was redirected to the breast imaging section for further evaluation.

Mammography (MG) detected a well-defined, circumscribed shaped, radiopaque, nodular lesion with the epicenter of retroareolar region in MG (fig 1a). US showed a 4 cm circumscribed shaped lesion with promi-
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The lesion was complex, with cystic and solid components and moderate vascularization (fig 1c).

In strain US elastography evaluation, Ueno score was evaluated as 2 and in shearwave elastography, the highest elasticity value in the lesion was 2.75 m/s (16.6 kPa) (fig 1d,e). The lesion was interpreted as having intermediate malignant potential. But, taking in consideration the result of B-mode and Doppler US findings, the lesion was diagnosed as a malignant lesion, with pre-diagnosis ESPC, and categorized as Breast Imaging and Data System (BIRADS) 5. Thereafter, a US guided core needle biopsy was performed and the histological results confirmed our suspicion of ESPC.

The patient was redirected to excisional surgery for a total mastectomy and final pathologic diagnosis was ESPC without invasion (fig 1f,g). Estrogen and progesterone receptors were positive, Cerb-B2, HMWK, Calponin and p63 were negative.

Discussions

ESPC is a rare malignant breast tumor. The incidence is 1-2% in the general population [9]. Although it is more common in elderly women, most of male breast cancers are ESPC [10,11]. These tumors are well-defined including cystic components and hemorrhagic elements. ESPC usually presents with palpable, painless mass with or without nipple discharge [12].

In US elastography, malignant breast lesions are stiffer than benign tumors. These features of the lesions increase the specificity of US elastography in discrimination of the lesion [13]. In the literature 2-3.065 m/s and 70-80.17 kPa are considered the threshold values in discrimination between benign and malignant tumors [14,15].

There are false-positive and false-negative results of US elastography depending on the application technique, breast tissue thickness, the structure of surrounding tissue, lesion size and histologic features [16]. Malignant lesions with soft tissue structure, DCIS, mucinous carcinoma and necrotic tumors have less stiffness than other malignant tumors. In our case, although it was a malignant lesion, it had benign lesion characteristic evidencing a low Ueno Score with Score 2 and low strain value with 2.75 m/s, 16.6 kPa. In our opinion, these false-negative findings depend on soft cystic components surrounding solid parts of the tumor, a non-invasive pattern meaning no infiltration into the surrounding tissue. Additionally, WHO classified ESPC as DCIS and DCIS has frequently false-negative US elastography findings.

We presented a case of ESPC in a man. Conventional radiologic features of ESPC, including MG, US and color Doppler US have been reported in the literature and
are well-known but US elastography findings of ESPC have not been described.

In conclusion, although ESPC is accepted as DCIS, it is a malignant lesion and needs to be total excised surgically. However, US elastography of ESPC could have benign features with false-positive imaging findings. US elastography provides a prominent contribution in the discrimination of benign and malignant lesions; in the radiologic diagnosis of ESPC, conventional radiologic features should be considered in the first stage.

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