Multiple metastasis of malignant melanoma. The diagnostic role of ultrasonography starting from a parotid tumor.

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Introduction

Surface tumors (including those of the salivary glands) can be indicative of either an incipient pathology or, conversely, an advanced neoplasm. The clinical picture is not always characteristic; therefore, any palpable formation should be explored using ultrasound (US). The method is highly effective. Applications focused on superficial organs such as the skin, breast, and testicle are well-known [1]. The overall accuracy of US is very good, but it significantly increases through the correlation of morphological, vascular, and elastographic information [2]. In order to identify malignant changes, the US and other imaging investigations require to be extended throughout the entire body. Biopsy and histopathological examination are mandatory, ensuring the correct and efficient oncological therapy.

Case report

A 60-year-old patient, known for approximately 3 years with a slowly developing right parotid tumor, was referred to our department for US exploration. Upon presentation, the patient exhibited good general condition, and the examination of the face revealed irregular skin deformation with color anomalies, palpably hard, adherent to underlying tissues, and painless (fig 1a). US was performed using a General Electric LogiQ 10 apparatus with a variable-frequency transducer (2-9 MHz, respectively 15 MHz) and was compared with the contralateral region. The examination identified in the right parotid a solid, heterogeneous tumor, poorly defined, with dimensions of 50/37/32 mm, firm to the touch. Shear wave elastography showed heterogeneous rigidity, globally increased with values of approximately 117 kPa/6.26 m/sec), about 10 times higher than those in the left parotid (fig 1 b-e). Doppler vascular exploration did not identify flow signals. Extended examination detected right submandibular, right intercostal, subclavicular subcutaneous tissue, and left inguinal adenopathies (fig 1f-i). Abdominal ultrasound identified bilateral adrenal metastasis and retroperitoneal adenopathies (fig 2). CT examination additionally identified pulmonary nodules, confirming the other findings. An echoendoscopic-guid-
ed biopsy of the left adrenal tumor revealed features of malignant metastatic melanoma (fig 3). A review of the patient’s history revealed the presence of a previously neglected melanotic skin lesion. Based on these findings, a diagnosis of metastatic, generalized melanoma with parotid, lymph node, cutaneous, and adrenal involvement was established. The patient was referred to the oncology department for specialized treatment.

**Discussion**

The assessment of tumors is a primary attribute of US. The method identifies masses larger than 10 mm if there are no gas interpositions or exaggerated attenuation [3]. In practice, any visible deformation or anomaly detected on imaging is suitable for US exploration. Clinical applications are numerous, and the identification of new modes (elastography, CEUS) continues to increase their number. US of the maxillofacial region is a standard in the field, especially for evaluating salivary glands, focusing on degenerative, lithiasic, inflammatory, or tumoral diseases [4,5]. For malignant tumors, diagnostic criteria include glandular asymmetry, dynamic volume increase, heterogeneous echostructure, and indistinct tumor contour. In advanced stages, invasion into adjacent organs and hypoechoic adenopathies may appear. Elastography is useful, with the “strain” mode being subjective, while the “shear wave” mode is operator-independent and helpful in complementing palpation. In the presented

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**Fig 1.** a) Parotid tumors, clinical aspect; ultrasonographic (b, c) and elastographic (d, e) examination. Images evidence enlargement of the parotid, important tissue alterations of tumoral nature, blurred delimitation, marked rigidity; metastases of the malignant melanoma - right subcutaneous subclavicular (f), left hemothorax (g), right submandibular (h), subcutaneous in the left inguinal abdominal wall (i).

**Fig 2.** Metastases of the malignant melanoma in the right adrenal (a), left adrenal (b), retroperitoneal (c).

**Fig 3.** Malignant melanoma. Histology (HE stain x20 magnification). Echoendoscopic bioptic material from the left adrenal.
In this case, the parotid nodule’s rigidity was increased, a feature encountered in malignant tumors (nonspecific criterion; controversial according to some authors [6]). The method cannot provide orientation regarding the origin of some metastases. Distinguishing between benign and malignant parotid tumors through US is possible when multiple factors are considered, although some authors find this approach to be “challenging” [7]. Metastases in the parotid gland are rare. Melanotic metastases mainly originate from the scalp region [8]. Any tumor transformation requires expanding exploration to other anatomotopographic regions. The detection of tumor formations should consider melanoma, a condition known for its aggressiveness and widespread dissemination.

Conclusions

Point-of-care ultrasound focused on clinical aspects is crucial for the initial detection of tumor pathology. Identifying criteria for malignancy necessitates expanding the investigation along lymph node stations and other potentially involved organs. Clinical examination and patient history can assist in raising suspicion of cutaneous melanoma, with histopathological examination collected from any detected tumor formation being mandatory for clarifying the diagnosis.

References