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## OPINION ARTICLE

# Ultrasound-Guided Fine-Needle Aspiration Cytology and Core-Needle Biopsy in Dermatology: A Step Forward<sup>☆</sup>



## Punción aspiración con aguja fina y biopsia con aguja gruesa ecoguiada en dermatología: un paso adelante

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Ultrasound imaging is a versatile and dynamic test that does not involve ionizing radiation, and its use and structured training in its use are becoming more common among dermatologists.<sup>1</sup> One of the many advantages of this technique is the ability to perform ultrasound-guided procedures, such as injections and sample collection, cytology and biopsies. In routine practice, the ultrasound study of a subcutaneous lesion of uncertain etiology may be supplemented with fine-needle aspiration cytology (FNAC) or core-needle biopsy (CNB). The international working group DERMUS, which is made up of radiologists and dermatologists who are experts in ultrasound, considers ultrasound-guided procedures to be one of the skills of advanced training in dermatologic ultrasound.<sup>2</sup>

FNAC is performed using a fine needle that makes it possible to extract a cytology sample. This technique is performed in outpatient clinics as an ambulatory procedure, using a fine needle (e.g., 21-25 G, Ø0.8-0.5 mm) and a disposable syringe. The technique consists of inserting a needle into the lesion and aspirating the sample by means

of negative pressure in the syringe, which can be generated manually or with the aid of a metal syringe holder (Cameco, Täby, Sweden). The needle is moved in different directions within the lesion to obtain a larger sample. The sample obtained is placed on a glass slide and fixed in air for Giemsa or Diff-Quick staining, or fixed with alcohol for Papanicolaou staining. The cytology sample may also be prepared using the plasma-thrombin method to prepare a cell block.<sup>3</sup>

The main advantages of FNAC are the simplicity of the technique, the low cost, the practical absence of pain, and the rapidity of the pathological anatomy report. The accuracy of the technique in discriminating between benign and malignant cutaneous lesions has been found to reach 80% in recent series.<sup>4</sup> FNAC does not tend to involve complications provided that asepsis and the procedure technique are correctly observed. The disadvantage of FNAC is the small size of the cytologic sample, which means that interpretation of the disease may be difficult and may produce false negatives. Unlike blind FNAC (not ultrasound-guided), ultrasound-guided FNAC makes it possible to select the most cellular areas of the lesion and avoid vascular structures, thus increasing the diagnostic yield<sup>5</sup> and preventing complications such as bleeding.

CNB is performed using a thick needle that makes it possible to obtain 1 or more tissue samples. The technique consists of inserting a disposable needle into the lesion and then operating the firing mechanism to

<sup>☆</sup> Please cite this article as: Vidal D, Alfageme F. Punción aspiración con aguja fina y biopsia con aguja gruesa ecoguiada en dermatología: un paso adelante *Eczema y urticaria en Portugal*. 2019;110:707–709.

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obtain a sample. Needles are currently available in different diameters (e.g., 18 G, 1.2 mm  $\emptyset$ ) and lengths, and may be lateral-cut<sup>6</sup> or tip-cut. The firing mechanism may be automatic or semiautomatic, and may be disposable or reusable after sterilization. The physician is responsible for choosing the most appropriate needle and firing mechanism for each case. The sample obtained is usually a cylinder of tissue with a diameter slightly smaller than that of the needle, and of variable length (e.g., 10 mm); the sample is fixed in formaldehyde and embedded in paraffin. The same needle may be used where multiple CNB samples of a lesion are required; where CNB samples of multiple lesions are required, however, a different needle must be used for each lesion.

CNB is a rapid, safe, ambulatory procedure but it does require local anesthesia and imaging equipment (e.g., ultrasound) to ensure the correct positioning of the needle before firing. The technique is a little more complicated than that of FNAC, but the diagnostic yield is greater.<sup>7</sup> CNB does not tend to involve complications provided that asepsis and the procedure technique are correctly observed.<sup>8</sup> Potential adverse effects of CNB include pain, hematoma, infection, and damage to adjacent tissue. In rare cases, CNB of a tumor may lead to seeding of malignant cells along the needle track.<sup>9,10</sup>

Several studies have been published on the utility of FNAC and CNB in the diagnosis of dermatologic tumors. Soudack et al.<sup>11</sup> performed CNB in 183 cases of soft-tissue tumors and obtained a diagnosis in 91% of cases, with no complications. The sensitivity and specificity for discriminating between benign and malignant lesions were 97% and 99%, respectively. In the case of cutaneous T-cell lymphoma, Battistella et al.<sup>12</sup> performed CNB in 38 patients with palpable enlarged lymph nodes larger than 1.5 cm. Histologic material that allowed for lymph-node staging without the need for open surgery was obtained in all cases. In a patient with Merkel cell carcinoma, Ostović et al.<sup>13</sup> performed FNAC in 3 subcutaneous nodules and the diagnosis of metastasis was confirmed.

In a lymph-node study of patients with melanoma, Ternov et al.<sup>14</sup> performed FNAC prior to sentinel node biopsy (SNB) in 91 patients with stages I and II. Twenty-two percent had a positive SNB and the sensitivity of the FNAC was 76%. Voit et al.<sup>15</sup> also performed FNAC prior to SNB in 1000 patients with stages I and II. Twenty-one percent had a positive and the sensitivity of the FNAC was 51% overall, 63% in ulcerated tumors, and 76% in T4 stages.

In the follow-up of patients with melanoma, Voit et al.<sup>16</sup> consider that FNAC is useful for identifying lymph node metastasis in patients with clinically normal lymph nodes, especially in T3 and T4 melanomas. Bohelay et al.<sup>17</sup> performed CNB in 72 patients with suspected lymph node metastasis. The sensitivity and specificity of the CNB were 97% and 100%, respectively, and no adverse effects occurred.

In light of the above, we believe that ultrasound-guided FNAC and CNB are highly useful diagnostic techniques with minimum morbidity. Radiologists and endocrinologists<sup>18</sup> have already implemented these techniques in routine practice and dermatologists who are experts in ultrasound can thus also use them in collaboration with pathologists.<sup>19,20</sup>

This practice prevents our patients from being referred to different hospital departments and reduces diagnosis time.

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