

# Differences between finger and toe Meissner corpuscles: Searching for the optimal place to analyze meissner corpuscles in cutaneous biopsy

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## Abstract

**Background:** Skin biopsy is a minimally invasive and repeatable technique, applicable in any part of the body that can allow for diagnosis and control of treatments, but to analyze Meissner corpuscles biopsy of glabrous skin is necessary it is recommendable obtained the maximal amount it is possible. Changes in density, size, and morphology occurs in several peripheral neuropathies as well as diseases affecting the central nervous system. **Methods:** We used immunohistochemistry and image analysis to establish differences in the immunohistochemical profile, density, morphology, size and depth relative to the epidermis of Meissner's corpuscles from fingers and toes in a homogeneous age-group. **Results:** The morphology of Meissner corpuscles was variable. In fingers ellipsoidal non-lobulated corpuscles predominate (about 82%) while in toes most of them showed irregular morphology (60%). No differences between fingers and toes were noted in the basic immunohistochemical profile, except for capsulation. The mean density of Meissner corpuscles was  $3,22 \pm 0,86/\text{mm}^2$  and  $1,15 \pm 0,71/\text{mm}^2$ , respectively; and the Meissner corpuscles index was  $1,09 \pm 0,07$  and  $0,28 \pm 0,09$ , respectively. Regarding the size Meissner corpuscles from the fingers measured  $108 \pm 24.2 \mu\text{m} \times 64 \pm 9 \mu\text{m}$ , and those from toes  $87 \pm 21.2 \mu\text{m} \times 34 \pm 6 \mu\text{m}$ . Finally, the depth relative to the epidermis was  $3.6 \pm 0.9 \mu\text{m}$  in fingers and  $19 \pm 16.2 \mu\text{m}$  in toes. **Conclusion:** the study of Meissner corpuscles in cutaneous biopsy from fingers may offer advantages over that from toes because in fingers Meissner's corpuscles are more abundant and superficial, larger, and express more regularly the defining markers of the main corpuscular components. © 2023 The Authors

## Author keywords

Cutaneous biopsy; Finger; Human; Meissner's corpuscles density; Meissner's morphometry; Toe