

Verification and characterisation of human digital Ruffini's sensory corpuscles

Cobo, R.
García-Mesa, Y.
Cárcaba, L.
Martin-Cruces, J.
Feito, J.
García-Suárez, O.
Cobo, J.
García-Piqueras, J.
Vega, J.A.

Abstract

Ruffini's corpuscles are present as long fusiform encapsulated sensory structures in different tissues including the skin. Although physiological analyses strongly suggest their existence in glabrous digital skin, such localisation remains unconfirmed. Here, we have investigated the occurrence of typical Ruffini's corpuscles in 372 sections of human digital skin obtained from 186 subjects of both sexes and different ages (19–92 years). S100 protein, neuron-specific enolase and neurofilament proteins were detected, and the basic immunohistochemical profile of these corpuscles was analysed. Fewer than 0.3 Ruffini's corpuscles/mm² were detected, with density distribution across the fingers being F4 > F3 > F2 > F1 > F5 and absolute values being F2 > F1 > F3 > F4 > F5. Axons displayed neuron-specific enolase immunoreactivity, glial cells forming the core contained S100 protein, and the capsule was positive for CD34 but not Glut1, demonstrating an endoneurial origin. Present results demonstrate the existence of Ruffini's corpuscles in human glabrous digital skin at very low densities. Moreover, the identified Ruffini's corpuscles share the basic immunohistochemical characteristics of other dermal sensory corpuscles. © 2020 Anatomical Society.

Author keywords

cutaneous sensory corpuscles
glabrous skin
immunohistochemistry
Ruffini's corpuscles