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The nerve fiber relationship with human arrector pili muscle cells: electron microscopy findings

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Introduction. The arrector pili muscle has been the topic of several morphological studies for the different modality of association with the follicural unit, belonging to different body region ,employing reconstructed tridimensional images of serial histological sections.

However up to date no ultrastructural study on the nerve fibers and their relationship with smooth muscle cells of the human muscle has been carried out.This is a very important issue to understand the anatomical bases supporting the neuroeffector mechanism modulating piloerection in normal and pathological condition.

Materials and methods. Arm skin biopsies from children suspected for metabolic diseases but resulted negative to previous microscope observation, were reexamined for the presence of arrector pili smooth muscle cells under a transmission electron microscopy.(Philips,CM10).

Results. The smooth muscle cells appear in a more or less narrow relationship with axonal varicosities of unmyelinated nerve fibers localized near muscle plasmalemma . At neuromuscular region the Schwann envelope appears partially or totally retracted from axonal varicosities and a variable intercellular gap (0,15-0,3 um) remained between axonal and plasmalemmal membrane. The plasmalemma shows irregular profile with frequently protruded tract ,with towards the axon.The axon contained vesicles different for diameter and content : large dense core vesicles ,small dense core, and clear vesicles.

Conclusion. The ultrastructural morphology of arrector pili muscle myoneural junction ,appears quite different from that of the skin epithelial and myoneural junctions ,according to the neuroeffector mechanism modulating piloerection.

Keywords: Arrector pili muscle,electron microscopy,myoneural junction,human