

Are telocytes related to maintenance of vascular homeostasis in normal and pathological aorta?

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The telocyte (TC) is a new interstitial cell type described in a wide variety of organs and loose connective tissues around small vessels, but its presence in large arteries remains unexplored. TCs have small cell bodies and remarkably thin, long, moniliform processes called telopods (Tps). Using transmission electron microscopy and immunofluorescence, we identified TCs in normal human thoracic aortas and in those with aneurysm and acute dissection (TAAD). In normal aortas the TCs were distributed throughout the connective tissue of the adventitial layer, in its innermost portion and at the zone of transition with the medial layer, with their long axes oriented parallel to the external elastic lamellae, forming a three-dimensional network, without prevalence in the media layer. In contrast, TAAD TCs were present in the medial layer and in regions of neovascularization. The most important feature of the adventitia of diseased aortas was the presence of numerous contacts between TCs and stem cells, including vascular progenitor cells. Although the biologically functional correlations need to be elucidated, the morphological observations presented here provide strong evidence of the involvement of TCs in maintaining vascular homeostasis in pathological situations of tissue injury.