

CAROTID BODY MORPHOLOGY IN DIABETIC RATS

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Multiple reasons may underlie a decrease in the hypoxic ventilatory response (HVR) in diabetes. One, as yet, little explored cause of the decrease could be structural changes in the carotid body (CB), a sensory organ that generates the HVR. We addressed this issue in the current study by examining the CB morphology in rats with streptozocin-induced diabetes of 4 weeks' duration. Transmission electron microscopy was employed to assess CB ultrastructure. The most striking diabetic-changes in the CB, as compared with normal healthy organs, were a substantial outgrowth of connective tissue, lengthening the O₂ diffusion path from the capillaries to glomus cells, and the features of angiogenesis. These changes were accompanied by only modest ultrastructural alterations in the glomus cells themselves. We conclude that diabetic-changes in CB parenchyma may impinge on the organ's ability to carry on the stimulatory HVR. On the other hand, stagnant hypoxia clearly developing in diabetic CB tissue may functionally reset the organ's basal excitability to a higher level, which helps compensate for milder deficits in the HVR.