

Correlation of Adventitial Vasa Vasora Density with Intima-Media Thickness in Aorta of Cholesterol-Fed Rabbits

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Abstract

Background: Atherosclerosis has been considered as the disease of intima with the role of tunica adventitia so far neglected. Current evidence shows that adventitia, and particularly the vasa vasora (VV) reacts to the process of atherogenesis.

Objective: The study was aimed to calculate the VV density in adventitia and to correlate it with intima-media thickness in aorta of cholesterol-fed rabbits.

Materials & Methods: This experimental study was conducted in Army Medical College Rawalpindi. Samples of vessels were obtained from twenty adult NZW rabbits fed normal (group A) or 2% high-cholesterol (group B) diet for 6 weeks (n=10/group). Aortic sections were taken from each part (ascending, arch, descending thoracic and abdominal) of every aorta. Light microscopic cross sectional analysis was performed in H&E stained slides. Intima-media thickness (IMT) and adventitial VV density were calculated and their correlation was investigated in each part of aorta.

Results: A total of 80 cross sections were analyzed. Mean±SE IMT and adventitial VV density was significantly increased in ascending, arch, and descending thoracic parts of group B versus their equivalent aortic parts in group A. But, there was an insignificant difference of means regarding VV density of abdominal aorta between both groups, despite a significant increase of IMT in group B. A very strong positive correlation was observed between the adventitial VV density and IMT in each aortic part of cholesterol-fed rabbits.

Conclusion: The present study showed that increased IMT is strongly associated with enhanced adventitial VV density in each aortic part of cholesterol-fed rabbits.

Key words: Aorta, Cholesterol intima-media thickness, adventitia, vasa vasorum density