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Histological Changes in the Rat Thoracic Aorta after Chronic Nitric Oxide Synthase Inhibition

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Abstract: The objective of this study was to determine the morphological effects of chronic nitric oxide (NO) inhibition on the thoracic aorta of Wistar rats. Fifteen male Wistar Albino rats were divided into three groups. Group I rats (control group, n = 5) received tap water, group II rats (n = 5) recieved 100 mg/kg L-NAME (moderate NO inhibiton) and group III rats (n = 5) received 500 mg/kg L-NAME, in drinking water (severe NO inhibition) for 15 days. At the end of 15 days, the carotid arteries of the rats were cannulated and their blood pressure was measured. The rats were sacrificed and thoracic aorta segments were fixed in 10% neutral buffered formalin solution and examined by light microscope. The blood pressure results were expressed as the arithmetic mean \pm SEM. Statistical analysis of the data was performed by the Kruskal Wallis H test ($p < 0.05$). The differences between the groups were evaluated by the Mann-Whitney U test. Group I showed normal blood pressure and histology. Groups II and III had hypertensive blood pressure and showed vascular wall thickening. Irregular luminal layers of the endothelial cell linings and increased intensity of anti- α -SMA labeling were seen in both experimental groups. Our results revealed that chronic NO inhibition led to hypertension and structural changes in the thoracic aorta wall in Wistar rats.

Key Words: thoracic aorta, nitric oxide, L-NAME, rat, light microscopy

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