

## The Study of Vascular Mechanical Properties in Canine with Ultrasonography

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**ABSTRACT** A canine model was used to detect the effects of age and blood pressure on the mechanical property of arterial wall. After the dogs were anesthetized, the consecutive images of various arteries including the common carotid, brachial, radial, femoral, and tibial arteries were examined by non-invasive ultrasonography. The blood pressure and waveform of vascular pressure were collected simultaneously. All image data were analyzed by the vascular index (VI) software to examine the changes of vascular intima-media thickness (IMT), stiffness, and energy dissipation ratio (EDR). The values of IMT increased in older dogs and the vessels with larger calibers. The vascular stiffness increased with ages, and was higher in common carotid artery, and lower in the vessels of forelimbs and hindlimbs. The EDR of the tibial artery was higher than that of all other vessels, and the EDR decreased when the stiffness increased. The IMT, vascular stiffness, and EDR all increased when blood pressure was elevated by administration of Levophed®. The increase of vascular viscosity caused by Levophed® likely led to the increase of EDR. These results from animal study can verify the methodology for clinical applications. [Chen TC, Shau YW, Pao SH, Chou NK, Cheng CH, \*Shyu JJ. The Study of Vascular Mechanical Properties in Canine with Ultrasonography. *Taiwan Vet J* 35 (3): 190-198, 2009. \*Corresponding author TEL: 02-3366-1301, FAX: 02-2736-1939, E-mail: jjvetmed@ntu.edu.tw]

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