The role of neutrophils in hypertension

Araos, P.
Figueroa, S.
Amador, C.A.

Abstract
It is well accepted that the immune system and some cells from adaptive and innate immunity are necessary for the initiation/perpetuation of arterial hypertension (AH). However, whether neutrophils are part of this group remains debatable. There is evidence showing that the neutrophil/lymphocyte ratio correlates with AH and is higher in non-dipper patients. On the other hand, the experimental neutrophil depletion in mice reduces basal blood pressure. Nevertheless, their participation in AH is still controversial. Apparently, neutrophils may modulate the microenvironment in blood vessels by increasing oxidative stress, favoring endothelial disfunction. In addition, neutrophils may contribute to the tissue infiltration of immune cells, secreting chemoattractant chemokines/cytokines and promoting the proinflammatory phenotype, leading to AH development. In this work, we discuss the potential role of neutrophils in AH by analyzing different mechanisms proposed from clinical and basic studies, with a perspective on cardiovascular and renal damages relating to the hypertensive phenotype.

Author keywords
Hypertension
Inflammation
Innate immunity
Neutrophil
Oxidative stress