

# Plasma PCSK9 concentrations among acute myocardial infarction patients

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## ABSTRACT

**Introduction:** Proprotein convertase subtilisin/kexin type 9 (PCSK9) promotes LDL receptor (LDLR) degradation in the liver leading to increased levels of low-density lipoprotein cholesterol (LDL-C). We aim to determine the PCSK9 concentrations in Malaysian Acute Myocardial Infarction (AMI) patients. **Methods:** This study involved AMI patients admitted to Sarawak Heart Centre from August 2018 until March 2019. Blood samples collected during admission and 3 months after discharge were stored at -80°C freezer. Plasma PCSK9 concentrations were determined by quantitative sandwich enzyme immunoassay technique (R&D Systems, USA). **Results:** We recruited 249 AMI patients who had PCSK9 levels taken at baseline, and 81.5% of them had repeat PCSK9 levels measured 3 months after discharge. Mean age was 56.2(10.83) years and 89.6% were male. Patients with prior statin therapy were found to have significantly higher baseline PCSK9 concentrations as compared to statin-naïve patients [478.9(171.63)ng/ml vs 434.4(138.22)ng/ml; p=0.025]. STEMI and NSTEMI cohorts had similar PCSK9 baseline concentrations [445.7(148.60)ng/ml vs 455.3(156.40)ng/ml; p=0.638]. AMI patients demonstrated significantly increased PCSK9 concentrations at 3 months as compared to baseline [509.3(184.74)ng/ml vs 455.1(147.17)ng/ml; p=0.005]. Patients with hyperlipidemia (OR=2.21,95%CI=1.27,3.84; p=0.005) and those who had subsequent LDL-C $\geq$ 1.8mmol/L post 3 months (OR=2.05,95%CI=1.03,4.09; p=0.041) tended to have higher baseline plasma PCSK9 concentrations of  $\geq$ 500ng/ml. AMI patients with MACE at 1 year had significantly higher PCSK9 levels at 3 months compared to those who did not suffer a MACE[626.0(313.15)ng/ml vs 461.0(216.33)ng/ml; p=0.007]. **Conclusion:** Our study demonstrated higher plasma PCSK9 concentrations among AMI patients compared to reports from other published studies. PCSK9 concentrations at 3 months may predict clinical outcomes among AMI patients.