

Clinical Contribution of Clonal Hematopoiesis driver mutation in Korean Cardiovascular Patients

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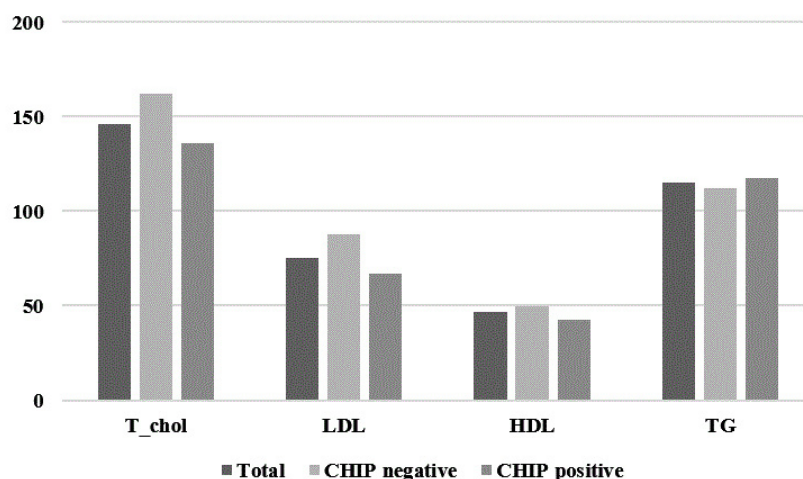
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Background/Aims: Clonal hematopoiesis of indeterminate potential (CHIP), which is defined as somatic mutation in hematopoietic stem cells leading to clonal expansion in circulating blood cells, is known as the driver of atherosclerosis and cardiovascular disease. We studied cardiovascular patients with or without CHIP mutations to compare mutational characteristics and clinical outcome.

Methods: This study analyzed 149 patients age ≥ 60 years with normal complete blood cell count from the tertiary cardiovascular center in Korea. We prospectively obtained baseline characteristics of clinical and laboratory data and performed targeted next-generation sequencing of 49 myeloid malignancy driver genes; such as DNMT3A, TET2, ASXL1). We evaluated laboratory data, echocardiography value and clinical outcome as a primary outcome.

Results: We studied 149 individuals (48 female, 101 male), 66 of whom have CHIP. CHIP mutations were found highly prevalent in DNMT3A (39 individuals) and TET2 (12 individuals) genes among 10 genes related to CHIP. Patients with CHIP mutations were older (69.5 vs 66, $P=0.0196$) and had greater male portions (72.73% vs 63.86%, $P=0.3297$), otherwise baseline characteristics showed no significant differences between two groups. In laboratory data, patients with CHIP mutations showed comparatively low cholesterol levels, T-chol (136 vs 162, $P=0.0082$), HDL (42.5 vs 49.5, $P=0.00241$) and LDL (67 vs 88, $P=0.0038$). We found no significant difference in clinical outcome depending on CHIP mutations.

Conclusions: CHIP mutations are common in elderly Korean cardiovascular patients and associated with the pathogenesis of various cardiovascular disease. This study analyzed baseline characteristics and clinical outcome of cardiovascular patients and interestingly patients with CHIP mutation were found with lower cholesterol levels. This study suggests further studies may be needed about cholesterol regulations of CHIP mutation drivers.



	Total (N=149)	CHIP negative (N=83)	CHIP positive (N=66)	P-value
Age	68	66	69.5	0.0196
BMI	24.86±3.3	24.89±3.46	24.82±3.11	0.9049
Female	48	30	18	0.3297
Male	101	53	48	
HTN	108	60	48	0.8566
DM	56	33	23	0.7628
Dyslipidemia	78	44	34	>0.99
CAD Family Hx.	38	18	20	0.2614