

# THE ASSOCIATION BETWEEN ELEVATED LEVELS OF ERYTHROPOIETIN AND THE NUMBER OF *ENDOTHELIAL PROGENITOR CELL* WITH IMPROVEMENT OF ENDOTHELIAL FUNCTION IN RENAL FAILURE PATIENTS 3 MONTHS AFTER KIDNEY TRANSPLANTATION

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## Introduction

Kidney transplantation (KT) improved endothelial function. Elevated level of erythropoietin (Epo) could activate and mobilize Endothelial Progenitor Cell (EPC), thus would improve endothelial function. The improvement of endothelial function will decrease morbidity and mortality from CV disease in patients with chronic kidney function.

## Objectives

To determine association between elevated level of erythropoietin (Epo) and the numbers of EPC CD34<sup>+</sup>-CD133<sup>+</sup> with the improvement of endothelial function in patients 3 months after kidney transplantation

## Methods

1. Cross sectional study prior and 3 months after KT in patients with renal failure who underwent KT in Cipto Mangunkusumo Hospital, Jakarta, Indonesia
2. The study included 21 subjects who enrolled from July 2013 to February 2014
3. Blood samples prior and 3 months after KT were collected to evaluate the level of Epo, numbers of EPC CD34<sup>+</sup> and CD133<sup>+</sup> and level of assymetric dimethylarginine (ADMA)
4. Statistical analysis was performed using Pearson or Spearman correlation test

TABLE 1. Levels of Epo, the number of CD34 + and CD133 EPC<sup>+</sup> and ADMA levels before and 3 months after KT

Variabel	Before KT	3 mo after KT	p
Epo (mIU/mL)	9.20 (1.40-47.30)	11.10 (2.70-43.70)	0.985
CD34 <sup>+</sup>	1.51 (0.66-7.07)	2.77 (1.42-5.98)	<b>0.005</b>
CD133 <sup>+</sup>	1.46 (0.39-5.81)	2.00 (1.12-7.21)	<b>0.002</b>
ADMA (μmol/L)	0.74 (0.54-1.56)	0.66 (0.48-0.94)	<b>0.002</b>

TABLE 2. Correlation Epo levels, the number of CD34 + and CD133 EPC<sup>+</sup> with ADMA levels before and after KT

Variabel	Before ADMA		3 mo after ADMA	
	r	p	r	p
Epo	-0.075	0.745	-0.258	0.259
CD34 <sup>+</sup>	0.058	0.803	0.015	0.948
CD133 <sup>+</sup>	0.266	0.243	0.001	0.998

## Results

The study showed that prior and 3 months post KT:

1. EPC numbers of CD34<sup>+</sup> and CD133<sup>+</sup> were significantly ↑ ( $p < 0.05$ )
2. Level of Epo was increased ( $p > 0.05$ )
3. ADMA level was significantly ↓ ( $p < 0.05$ ).

Three months after KT showed a significant association between elevated level of Epo and the numbers of EPC CD34<sup>+</sup> ( $r = 0.466$ ,  $p > 0.05$ )

There was no association between the elevated level of Epo and the numbers of EPC CD34<sup>+</sup> and CD133<sup>+</sup> with the improvement of endothelial function three months after KT

## Conclusions

3 months after KT showed an elevated level of Epo, the numbers of EPC CD34<sup>+</sup> and CD133<sup>+</sup> and the decreased level of ADMA

No association between the elevated level of Epo and the numbers of EPC CD34<sup>+</sup> and CD133<sup>+</sup> with the improvement of endothelial function in patients 3 months after KT

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