



Contents lists available at ScienceDirect

journal homepage: www.elsevier.com/locate/humimm

Review

Vascular endothelial growth factor gene polymorphisms and vasculitis susceptibility: A meta-analysis



Gwan Gyu Song, Jae-Hoon Kim, Young Ho Lee*

Division of Rheumatology, Department of Internal Medicine, Korea University College of Medicine, Seoul, Republic of Korea

ARTICLE INFO

Article history:

Received 15 November 2013

Accepted 24 February 2014

Available online 6 March 2014

Keywords:

Vasculitis

VEGF

Polymorphism

Meta-analysis

ABSTRACT

Objective: The aim of this study was to explore whether vascular endothelial growth factor (VEGF) polymorphisms are associated with susceptibility to vasculitis.

Methods: Meta-analyses were conducted on the associations between the –634 C/G, +936 C/T, –1154 A/G, and –2578 A/C polymorphisms of VEGF and vasculitis.

Results: Eight studies on VEGF polymorphisms and vasculitis involving 2740 subjects (vasculitis 834, controls 1906) were included in this meta-analysis. The meta-analysis showed no association between vasculitis and the VEGF –634 C allele (OR = 1.161, 95% CI = 0.921–1.464, $p = 0.207$) among study subjects. Meta-analysis showed no association between vasculitis and the VEGF +936 T allele (OR = 1.121, 95% CI = 0.905–1.390, $p = 0.295$). However, stratification by ethnicity indicated a significant association between the VEGF +936 T allele and vasculitis in Europeans, but not in Asians (OR = 1.486, 95% CI = 1.038–2.128, $p = 0.030$; OR = 0.958, 95% CI = 0.773–1.253, $p = 0.755$). Meta-analysis showed no association between vasculitis and the VEGF –1154 A/G and 2578 A/C polymorphisms.

Conclusions: This meta-analysis suggests that the VEGF +936 T allele is associated with susceptibility to vasculitis in Europeans, but not in Asians.

© 2014 American Society for Histocompatibility and Immunogenetics. Published by Elsevier Inc. All rights reserved.

Contents

1. Introduction	542
2. Methods	543
2.1. Identification of eligible studies and data extraction	543
2.2. Evaluation of publication bias	545
2.3. Evaluations of statistical associations	545
3. Results	546
3.1. Studies included in the meta-analysis	546
3.2. Meta-analysis of relationships between the –634 C/G, +936 C/T, –1154 A/G, and –2578 A/C polymorphisms and vasculitis	546
3.3. Heterogeneity and publication bias	546
4. Discussion	547
Acknowledgment	547
References	547

* Corresponding author. Address: Division of Rheumatology, Department of Internal Medicine, Korea University Anam Hospital, Korea University College of Medicine 126-1, Anam-dong 5-ga, Seongbuk-gu, Seoul 136-705, Republic of Korea. Fax: +82 2 922 5974.

E-mail address: lyhgh@korea.ac.kr (Y.H. Lee).

1. Introduction

Vasculitis is a heterogeneous group of disorders characterized by inflammation and damage in blood vessels, leading to tissue or organ injury [1]. Although the etiology of vasculitis is not fully understood, it has been suggested to occur given suitable interactions between a susceptible genetic background and environmental factors.

Vascular endothelial growth factor (VEGF) is an angiogenic regulator involved in blood vessel formation, mitogenesis, epithelial cell proliferation, and endothelial cell survival [2]. VEGF is expressed in smooth muscle cells, macrophages, neutrophils, and platelets [3], and induces proinflammatory changes in chronic inflammation such as leucocyte accumulation and blood vessel alterations [4]. VEGF serum level is significantly increased in

Table 1
Characteristics of the individual studies included in the meta-analysis.

Author (ref)	Country	Ethnicity	Disease	Subjects		Polymorphisms studied	Association findings
				Case	Control		
Zeng (2009) [10]	China	Asian	HSP	100	100	VEGF -634 C/G	NS
Huang (2008) [11]	Taiwan	Asian	KD	156	672	VEGF -634 C/G, +936 T/C, -2578 A/C	NS
Rueda (2006) [12]	Spain	European	HSP	57	226	VEGF -1154 A/G	NS
Nam (2005) [13]	Korea	Asian	BD	101	138	VEGF +936 T/C, -1154 A/G, -2578 A/C	NS
Rueda (2005) [14]	Spain	European	GCA	103	226	VEGF -634 C/A, -1154 A/G	NS
Kariyazono (2004) [15]	Japan	Asian	KD	103	144	VEGF -634 C/G	NS
Salvarani (2004) [16]	Italy	European	BD	122	200	VEGF -634 C/G, +936 T/C	-634 C/G ($p = 0.020$), +936 T/C (NS)
Boiardi (2003) [17]	Italy	European	GCA	92	200	VEGF -634 C/G, +936 T/C	-634 C/G ($p = 0.039$), +936 T/C (NS)

Ref, reference; HSP, Henoch-Schönlein Purpura; BD, Behçet's disease; KD, Kawasaki disease; WG, Wegener's granulomatosis; OR, odds ratio; CI, confidence interval; NS, not significant.

Table 2
Meta-analysis of the associations between the VEGF -634 C/G and +936 T/C polymorphisms and vasculitis.

Polymorphism	Population	No. of studies	Test of association			Test of heterogeneity		
			OR	95% CI	p -val	Model	p -val	I^2
A -634 C vs. G	Overall	6	1.161	0.921–1.464	0.207	R	0.018	63.2
	European	3	1.259	0.841–1.887	0.263	R	0.015	76.2
	Asian	3	1.037	0.857–1.255	0.706	F	0.220	33.9
	GCA	2	1.125	0.616–2.055	0.701	R	0.015	83.0
	KD	2	0.975	0.793–1.198	0.807	F	0.423	0
CC vs. CG + GG (recessive)	Overall	6	1.044	0.727–1.502	0.814	R	0.087	48.0
	European	3	1.097	0.617–1.953	0.752	R	0.072	62.0
	Asian	3	0.916	0.634–1.32	0.639	F	0.154	46.5
	GCA	2	0.814	0.519–1.275	0.368	F	0.985	0
	KD	2	0.799	0.540–1.183	0.263	F	0.894	0
CC + CG vs. GG (dominant)	Overall	6	0.975	0.643–1.478	0.904	R	0.001	77.2
	European	3	0.791	0.606–1.033	0.085	R	0.000	88.4
	Asian	3	1.134	0.854–1.505	0.385	F	0.479	0
	GCA	2	0.589	0.335–1.036	0.066	R	0.073	68.9
	KD	2	1.086	0.797–1.480	0.601	F	0.314	1.51
CC vs. GG	Overall	6	1.367	0.833–2.244	0.216	R	0.016	64.2
	European	3	1.663	0.742–3.730	0.217	R	0.020	74.4
	Asian	3	1.012	0.672–1.525	0.953	F	0.174	42.8
	GCA	2	1.333	0.418–4.257	0.627	R	0.024	80.5
	KD	2	0.875	0.564–1.358	0.552	F	0.575	0
B +936 T vs. C	Overall	4	1.121	0.905–1.390	0.295	F	0.248	27.3
	European	2	1.486	1.038–2.128	0.030	F	0.511	0
	Asian	2	0.958	0.733–1.253	0.755	F	0.950	0
	BD	2	1.271	0.898–1.797	0.176	F	0.116	59.6
TT vs. TC + CC (recessive)	Overall	4	1.022	0.533–1.962	0.948	F	0.803	0
	European	2	1.027	0.275–3.833	0.969	F	0.323	0
	Asian	2	1.021	0.482–2.161	0.957	F	0.899	0
	BD	2	1.295	0.461–3.633	0.624	F	0.704	0
TT + TC vs. CC (dominant)	Overall	4	1.013	0.794–1.293	0.915	F	0.101	51.7
	European	2	1.104	0.436–2.793	0.834	R	0.018	82.2
	Asian	2	0.941	0.689–1.285	0.700	F	0.903	0
	BD	2	1.307	0.883–1.934	0.181	F	0.101	62.7
TT vs. CC	Overall	4	1.086	0.563–2.092	0.806	F	0.905	0
	European	2	1.392	0.371–5.218	0.490	F	0.544	0
	Asian	2	1.001	0.470–2.131	0.998	F	0.911	0
	BD	2	1.340	0.475–3.778	0.580	F	0.605	0

OR, odds ratio; CI, confidence interval; R, Random effects model; F, Fixed effects model; NA, not available.

Download English Version:

<https://daneshyari.com/en/article/3349615>

Download Persian Version:

<https://daneshyari.com/article/3349615>

[Daneshyari.com](https://daneshyari.com)