

## 관상동맥질환과 만성 클라미디아 폐렴균 감염과의 관계

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Association of *Chlamydia Pneumoniae* Strain TWAR Antibody and  
 Angiographically Demonstrated Coronary Artery Disease

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## ABSTRACT

**Background :** A recent case-control study from Finland reported a strong relationship between high antibody titers to *Chlamydia pneumoniae*, strain TWAR, and both chronic heart disease and acute myocardial infarction. Other studies also suggested an association between *C. pneumoniae* infection and coronary atherosclerosis, based on the demonstration of increased serologic titers and the detection of bacteria within atherosclerotic tissue, but this association has not been yet regarded as an established theory. The objective of this study was to investigate the relationship between *C. pneumoniae* immunoglobulin G antibody titers and angiographically diagnosed coronary artery disease. **Method :** Coronary angiography was performed. Controls (n = 89) were coronary angiographically normal cases and coronary artery disease (n = 115) was diagnosed if coronary artery luminal diameter is obstructed more than 50% in more than one coronary artery. Micro-IF assay was used to measure *C. pneumoniae* TWAR antibodies. The sera were titrated in two-fold dilutions starting from 1 in 8, and a titre of 1 in 8 or more was judged positive. **Results :** The estimated risk of coronary artery disease, adjusted for age and gender, was greater among subjects with high (1 : 128) antibody titers than with low (1 : 8) antibody titers (relative risk, 7.9 : 95% confidence interval, 1.3 - 47.9). **Conclusion :** These results support an association between infection with *C. pneumoniae* and coronary artery disease only in high (1 : 128) antibody titers. (Korean Circulation J 1999;29(10):1076-1081)

**KEY WORDS :** Coronary artery disease · *Chlamydia pneumoniae* infection.

## 서 론

관상동맥질환은 심근경색, 심부전, 협심증 등 심혈관계 질환의 주원인으로, 1990년대 중반 이후 급속히 증가하고 있다. 관상동맥질환의 발생은 유전적, 환경적, 생활습관적 요인 등에 의해 결정되는데, 최근에는 만성 감염병이 관상동맥질환의 발생에 중요한 역할을 한다는 주장이 제기되고 있다. 특히, 클라미디아 폐렴균(*Chlamydia pneumoniae*)은 관상동맥질환과 밀접한 관련이 있는 것으로 알려져 있다. 본 연구는 관상동맥질환과 클라미디아 폐렴균 감염의 관련성을 조사하기 위하여, 관상동맥조영술을 시행한 환자들을 대상으로 클라미디아 폐렴균 항체 titer를 측정하고, 그 결과에 따라 관상동맥질환의 발생 빈도를 비교 분석하였다.

1)2)

1)3)4)5)

6)

7)8)

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1997 7 1998 6 204

대상 및 방법

방 법

가

가

(micro - immunofluorescence test)  
(HeLa)

(1000 × g, 30 min,

4 )

가

(pH 7.2)  
(IgM 1 : 32

1 : 8 1 : 1024 2 (30 ul) 30

30

IgG 가

Table 1

p  
<0.05

## 결 과

환자군과 대조군의 특징 (Table 2)

85 (73.9%), 30 (26.1%)  
50 (56.2%), 39 (43.8%)

Table 1. 클라미디아 페렴균의 혈청학적 진단기준

Test	Positive result
MIF with C.pneumoniae antigen <sup>†</sup>	
Acute antibody - - - - -	Fourfold titer rise : or IgM 16 or IgG 512
Preexisting antibody - - -	IgG 8-256
<sup>†</sup> EB antigen specific for C.pneumoniae	
*American Society of Microbiology, 1995	

Table 2. 환자군과 대조군의 특징

	(n = 115)	(n = 89)	
	No (%)	No (%)	P value
Gender			0.008
M	85 (73.9)	50 (56.2)	
F	30 (26.1)	39 (43.8)	
Age			0.001
30 - 39	3 ( 2.6)	13 (14.6)	
40 - 49	15 (13.0)	24 (27.0)	
50 - 59	40 (34.8)	22 (24.7)	
60 - 69	50 (43.5)	28 (31.5)	
70 - 79	7 ( 6.1)	2 ( 2.2)	
Smoking			0.001
Never	45 (39.1)	55 (61.8)	
Ever	70 (60.9)	34 (38.2)	
DM			0.004
No	87 (75.7)	81 (91.0)	
Yes	28 (24.3)	8 ( 9.0)	
HTN			0.259
No	62 (53.9)	55 (61.8)	
Yes	53 (46.1)	34 (38.2)	
CROL			0.589
< 240	102 (88.7)	81 (91.0)	
≥ 240	13 (11.3)	8 ( 9.0)	

58.5±8.3 , 1 : 128 12 : 1 , 1 : 128  
 52.4±10.6 , 가 7.9456, P 0.0239

60 가 50 (43.5%), 가  
 60 가 28 (31.5%) 가 , 가

70 (60.9%), 34  
 (38.2%) .

성별과 연령을 보정한 위험인자로 나는 소집단에서의 클라미디아 폐렴균 항체 양성율과 관상동맥질환과의 관계 (Table 6)

가 .  
 가 .

항체 역가 (Table 3 and 4)

가 1 : 8 33 (37%)  
 가 , 60 가 28 (31.4%)  
 가 ,

가 1 : 8 38 (33%)  
 가 , 1 : 32가 24 (20.8%)  
 가 , 60 가 50 (43.4%)  
 가 ,

Table 3. 정상군에서의 항체역가

	가						
	<8	8	16	32	64	128	
30 - 39	4/ 1	0/0	4/0	2/0	1/1	0/0	11/ 2
40 - 49	9/ 2	4/0	5/0	3/1	0/0	0/0	21/ 3
50 - 59	0/ 4	1/1	3/2	3/1	2/5	0/0	9/13
60 - 69	2/10	1/1	3/2	0/3	2/3	0/1	8/20
70	0/ 1	0/0	0/0	1/0	0/0	0/0	1/ 1
	15/18	6/2	15/4	9/5	5/9	0/1	50/39

(남 / 여)

성별과 연령을 보정한 클라미디아 폐렴균 항체와 관상동맥질환과의 관계 (Table 5)

1 : 8 , 1 : 8  
 1 : 8 38 : 33  
 , 77 : 56 , 0.9656, P  
 0.8315

1 : 8, 1 : 16, 1 : 32, 1 : 64, 1 :  
 128 가 1 : 8 8 : 8 , 1 : 16  
 22 : 19 , 1 : 32 24 : 14 , 1 : 64 11 : 14 ,

Table 4. 환자군에서의 항체역가

	가						
	<8	8	16	32	64	128	
30 - 39	0/ 0	0/0	1/0	0/0	1/0	1/0	3/ 0
40 - 49	2/ 0	1/0	3/0	4/0	1/0	3/0	14/ 1
50 - 59	11/ 6	3/0	6/3	7/0	1/1	2/0	30/10
60 - 69	8/ 7	3/1	5/3	7/6	5/1	4/0	32/18
70	2/ 1	0/0	1/0	1/0	1/0	2/0	6/ 1
	23/15	7/1	16/6	18/6	9/2	12/0	85/ 30

(남 / 여)

Table 5. 성별과 연령을 보정한 클라미디아 폐렴균 항체와 관상동맥질환과의 관계

Ab	Cases No	Controls No	Odds ratio unadjusted	Odds ratio adjusted*	95% CI	P value
<1 : 8	38	33	1.0	1.0		
1 : 8	77	56	1.0927	0.9656	0.6991 - 1.3336	0.8351
<1 : 8	38	33	1.0	1.0		
1 : 8	8	8	0.5995	0.5220	0.1916 - 1.4226	0.2038
1 : 16	22	19	0.6941	0.6905	0.3366 - 1.4162	0.3122
1 : 32	24	14	1.0277	1.0414	0.4914 - 2.2072	0.9156
1 : 64	11	14	0.4710	0.4022	0.1711 - 0.9451	0.0367
1 : 128	12	1	7.1929	7.9456	1.3161 - 47.9689	0.0239

**Table 6.** 위험인자에 따른 클라미디아 폐렴균 항체와 관상동맥질환과의 관계 (성별과 연령 보정)

	Ab ( 1 : 8)		Adjusted odds ratio	95% CI
	No of Cases	No of Controls		
Sex				
M	85	50	1.0385	0.6751 - 1.5974
F	30	39	0.886	0.5446 - 1.4416
Age				
< 50	18	37	1.8808	0.9233 - 1.4416
50	97	52	0.7639	0.5145 - 1.1343
CROL				
< 240	102	81	1.0243	0.7243 - 1.4487
240	13	8	0.6756	0.2659 - 1.7168
Smoking				
Never	45	55	1.0761	0.6933 - 1.6703
Ever	70	34	0.8306	0.4868 - 1.4173
HTN				
No	62	55	1.1147	0.7142 - 1.7397
Yes	53	34	0.7874	0.4751 - 1.3051
DM				
No	87	81	0.8836	0.6117 - 1.2764
Yes	28	8	1.2465	0.4978 - 3.1215

가 .

가 .

가 .

가 .

고 안

(TWAR) , ,

, , 1965 9)

, 1983

(AR - 39)가

. TWAR

, 1989

TWAR

(*Chlamydia pneumoniae*) .<sup>(10)</sup> .<sup>(17)</sup>

50%

.<sup>(10-12)</sup> 5

, 5 14

가 20 50%

가 . 가 가

, 75%

(3 5 ) ,

.

,<sup>(13)</sup>

.

가 .<sup>(14)</sup>

Ig M, Ig A, Ig G

.

(enzyme linked immuno - sorbent assay :

ELISA) . IgM

3 2 4 6

, IgG 6 8

3 . IgM

가 , IgG 가 1 2

512 .

, ,

가 ,

.<sup>(15)</sup>

가

가

, , ,

가 ,

.

(Sir William Osler)<sup>(16)</sup>

, ,



결 론 :

1 :

128 가

중심 단어 :

98 10

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