

Cerivastatin

Effect of Cerivastatin on Serum Muscle Enzymes

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Abstract : Hypercholesterolemia is firmly established as a risk factor for the development of atherosclerosis. Cerivastatin is a third generation statin, a synthetic HMG-CoA reductase inhibitor which lowers plasma cholesterol level by inhibiting endogenous cholesterol synthesis. It has also been reported that cerivastatin is relatively well tolerated and has a low incidence of adverse effects. It has been also reported that less than 1% of the patients treated with cerivastatin experienced clinically significant elevation of muscle enzymes. The purpose of this study was to investigate the effect of cerivastatin on serum muscle enzymes. The patients with primary hypercholesterolemia were treated with statin at least 4 weeks in Keimyung University Dongsan Medical Center. We compared the effect of cerivastatin treatment (group A, 33 patients) on changes of muscle enzymes including creatine kinase (CK), aspartate transaminase (AST) and lactate dehydrogenase (LDH) with other statin treatment group (group B, 46 patients). The group A produced statistically significant elevation of CK and AST ($p < 0.05$) after treatment with cerivastatin when compared to the group B. More than three fold elevation of CK level was developed only in the group A ($p = 0.02$). These results indicate that cerivastatin induces higher incidence of muscle enzymes elevation than other statins.

Key Words: Aspartate transaminase, Cerivastatin, Creatine kinase, Lactate dehydrogenase

[13,14]. cerivastatin [6,9], cerivastatin cerivastatin statin (low density lipoprotein-cholesterol, LDL-C) 가가 . 가 [1]. statin 3-hydroxy-3-methyl-glutaryl-coenzyme A (HMG-CoA) HMG-CoA HMG-CoA 1. 1998 5 2001 3 . statin CK, AST LDH가 가 가 [2,3]. 1981 statin pravastatin statin 1 79 . Gemfibrozil lovastatin, pravastatin, simvastatin, 2 fluvastatin, 3 atrovastatin cerivastatin nine 1.6 mg/dL , creati- [4]. Cerivastatin 1 . 5-80 mg 가 cerivastatin 1 0.25-0.4 mg LDL-C 2. statin cerivastatin (A) statin (B) . statin CK, AST LDH가 4 statin CK, AST LDH . CK SFBC-DGKC , AST IFCC without P -5-P LDH SFBC-SGKC (P-L) 가 [6-12]. 1 statin lovas-

가 , 가
 CK 201 U/L , AST 37
 U/L LDH 424 U/L
 .
 3.

±
 SPSS 10.0
 (statistical package for social science,
 SPSS Co., USA)
 Fisher's exact test Chi-square test
 . P 0.05
 가 .

59.8 ± 9.7
 39 , 40 . A
 33 59.9 ± 8.8 , 19 ,
 14 , B 46
 59.7 ± 10.4 , 20 , 26 A
 B (Table
 1). statin 8.2 ±
 7.9 , A cerivastatin 1

0.4 mg
 4.5 ± 3.4 , B atrovastatin 1
 20 mg 가 18 , pravastatin 1 10
 mg 가 3 , lovastatin 1 20 mg
 가 5 , simvastatin 1 20 mg 가
 20 10.8 ± 9.0

(Table 1).
 CK statin A 8
 (24.2%) 가 가 CK
 201.1 3423.9 (1057.1 ±
 1208.0) U/L , B 3 (6.5%)
 가 가 CK 218.9
 266.2 (237.9 ± 25.0) U/L , A
 CK 가가
 (p<0.05, Table 2). B CK 가 가
 atrovastatin 2 simvas-
 tatin 1 . CK 가
 A statin 2.5 ± 1.6 , B
 3.3 ± 1.2 A 가
 . CK가 3 가
 A 4 (12.1%) ,
 B ,
 (p<0.05, Table 2).
 AST statin A 5
 (23.1%) 가 가 AST
 39.5 156.8 (75.0 ± 47.7)

Table 1. Characteristics of patients

	Group A	Group B	Total
Total	33	46	79
Male	19	20	39
Female	14	26	40
Age (yrs)	59.9 ± 8.8	59.7 ± 10.4	59.8 ± 9.7
Range (yrs)	40-74	33-80	33-80
Treatment duration (months)	4.5 ± 3.4	10.8 ± 9.0	8.2 ± 7.9
Range (months)	1-13	2-35	1-35

Group A: cerivastatin treated group; Group B: other statin treated group.

Table 2. Increased creatine kinase level after treatment with statin

	Group A(n=33)	Group B(n=46)	Total (n=79)	<i>p</i> value
Number of CK increment	8 (24.2%)	3 (6.5%)	11 (13.9%)	0.02
Increased level of CK (U/L)	1057 ± 1208.0	238 ± 25.0	834 ± 1080.8	
Range (U/L)	201-3424	219-266	201-3424	
Time to increment of CK (months)	2.5 ± 1.6	3.3 ± 1.2	2.7 ± 1.5	
Range (months)	1-6	2-4	1-6	
Number of 3 times above normal increment of CK	4 (12.1%)	0	4 (5.1%)	0.02

Group A: cerivastatin treated group; Group B: other statin treated group.

U/L, B 1 (2.9%) 가 LDH 가
 가 AST 49.4 U/L, A (Table 4). LDH 가 A statin
 AST 가 (p<0.05, 3.5 ± 2.1, B 4.4 ± 1.5
 Table 3). AST 가 A statin 가 (Table 4).
 4.7 ± 2.8, B 8
 (Table 3).
 LDH statin A 2
 (9.5%) 가 가 LDH
 448.0 507.8 (477.9 ± 42.3)
 U/L, B 5 (26.3%) 가 가
 가 LDH 453.9
 578.5 (529.1 ± 45.8) U/L,

Table 3. Increased aspartate transaminase level after treatment with statin

	Group A(n=26)	Group B(n=34)	Total (n=60)	<i>p</i> value
Number of AST increment	5 (23.1%)	1 (2.9%)	6 (10.0%)	0.04
Increased level of AST (U/L)	75.0 ± 47.7	49.4	71.3 ± 44.6	
Range (U/L)	39.5-156.8		39.5-156.8	
Time to increment of AST (months)	4.7 ± 2.8	8	5.1 ± 2.9	
Range (months)	2-9		2-9	

Group A: cerivastatin treated group; Group B: other statin treated group.

Table 4. Increased lactate dehydrogenase level after treatment with statin

	Group A(n=21)	Group B(n=19)	Total (n=40)	p value
Number of LDH increment	2 (9.5%)	5 (26.3%)	7 (17.5%)	0.16
Increased level of LDH (U/L)	478 ± 42.3	529 ± 45.8	515 ± 48.2	
Range (U/L)	448-508	454-579	448-579	
Time to increment of LDH (months)	3.5 ± 2.1	4.4 ± 1.5	4.1 ± 1.6	
Range (months)	2-5	2-6	2-6	

Group A: cerivastatin treated group; Group B: other statin treated group.

[15], 가 가 가 가 가 가 가 [8,12,19].

가 [16]. 가

가 15% coenzyme- [17]. Q ATP

sequestrant, bile acid [10,13]. 3 statin cerivastatin probucol nicotinic acid, gemfibrozil, statin enantiometric Stein[5] cerivastatin 1-3% 가 ,

Statin [18]. statin 가 , 8

onate HMG-CoA meval- CK가 5 가 HMG-CoA 1% 10

LDL-C 가 Davignon [20] cerivastatin [5].

Statin LDL-C [13,18]. 2 CK AST

statin 가
 . [4]
 AST 가 15.6%
 , CK 가
 3.1% 3 가

1998 3 2001 6 30
 cerivastatin 31
 가 [21].
 statin cerivas-
 tatin 10
 [22], Millionis
 [23] Hargreaves Heales[24] statin
 cerivastatin , ,
 , gemfibrozil 가

A B
 가 , cerivastatin
 CK 가 가 가 24.2%
 statin 6.5%
 , CK 가
 3 가 가 12.1%, 5 가
 가 9.1%, 10 가
 6.1% .
 cerivastatin 1
 0.4 mg 가

cerivastatin
 statin CK AST
 가 LDH
 가 .
 cerivastatin 가
 cerivastatin
 가
 cerivastatin

가가
 Statin
 , cerivastatin
 statin
 CK AST
 (p<0.05). CK가 3 가
 cerivastatin
 , statin
 (p<0.05).

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