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(The effect of ACE gene polymorphism on the antiproteinuric
effect of angiotensin II receptor antagonist in patients
with non-diabetic chronic renal disease)
500 mg 70 mg 12
50 mg, 24 100 mg 4
70 mg losartan 12
24 (135.9±16.4mmHg vs.
119.5±15.0mmHg, 119.0±15.7mmHg, p<0.05), (88.8±
10mmHg vs. 77.4±8.8mmHg, 75.8±8.2mmHg, p<0.05),
(104.5±10.3mmHg vs. 91.5±9.4mmHg, 90.2±9.2mmHg, p<0.05),
(2243.0±1554.2mg/day vs. 1473.3±1336.5
mg/day, 1187.2±1582.1mg/day, p<0.05), (215.3±
42.9mg/dL vs. 191.2±31.1mg/dL, 183.9±30.3mg/dL, p<0.05),
(231.8±189.9mg/dL vs. 174.1±101.6mg/dL,
182.9 ±134.2mg/dL, p<0.05)
Losartan 12
24 (12 ;R²=0.318,
p<0.05, 24 ;R²=0.228, p<0.05).
Losartan 12 30% losartan
12 24
12 24
12 24
(1147.4±1055.2mg/day vs. 2288.2±1623.8mg/day, p<0.05).
losartan 12, 24, 48, 72, 24 hours, 48 hours, 72 hours, 24 hours, 48 hours, 72 hours (creatinine clearance) 12, 24, 48, 72, 24 hours, 48 hours, 72 hours.
(The effect of ACE gene polymorphism on the antiproteinuric
effect of angiotensin II receptor antagonist in patients
with non-diabetic chronic renal disease)

> 

I. Materials and Methods

- Renin-angiotensin system

  - Angiotensin II receptor antagonist

- Aldosterone

- Adrenergic hormone
keratin II (angiotensin-converting enzyme, ACE) 
kinin 2. ACE 3. ACE 4. ACE 5. ACE 6. ACE

Perna 7. ACE 8. ACE 9. ACE
ACE inhibitors, such as ramipril, are commonly used in diabetes to reduce proteinuria. A study by Ruggenenti et al. demonstrated a 25% reduction in proteinuria with ACE inhibitors compared to placebo, especially in diabetic patients with ID1 and ID2 polymorphisms. Losartan, an angiotensin II receptor antagonist, has also been shown to reduce proteinuria in diabetic patients, with a 24% reduction observed. This highlights the importance of ACE inhibitors and losartan in the management of diabetic nephropathy.
II. 

1. 

(1) 
(2)  
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III. 

(1)  
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(3)  

70밀리미터  

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3.0 mil/dL  

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(4) 10.00 60' 30' 0' 30' 60' 10' 0' 30' 60' 10' 0' 30' 60' 10' 0'
(5) 10.00 60' 30' 0' 30' 60' 10' 0' 30' 60' 10' 0' 30' 60' 10' 0'
(6) 10.00 60' 30' 0' 30' 60' 10' 0' 30' 60' 10' 0' 30' 60' 10' 0' (ADA)
10.00 60' 30' 0' 30' 60' 10' 0' 30' 60' 10' 0' 30' 60' 10' 0'

2. 預計方案

。預計方案

有關藥物治療(70%置位 24%置
立), 預計對症治療(0%置位 24%置
立), 預計輔助治療(ACE 50mg 置位 24%
立), 預計治療(losartan 50mg 置位 12%
立), 預計輔助治療(losartan 100mg 置位 24%
立), 預計輔助治療(calciu
m antagonist) 置位 4%
立, 預計輔助治療(ACE 置位 4%
立)。
125mmHg. 

. losartan 12% 30% 

. DNA extraction kit (Promega Co, Madison, WI, USA)

(2) 

ACE (PCR; polymerase chain reaction) 

sense primer 5’-CTGGAGACCACCTCCCATCTTCT-3’, antisense primer 5’-TGGGACCACACGCGCCCACTAC-3’ (ACE1) 

DNA 0.5μg, 40 pM primer, 3mM MgCl₂, 10mM Tris HCl(pH 8.3), 50mM KCl, 0.5mM dNTPs, 1U Taq polymerase 10 μL 50 μL 94°C 10, 94°C 1, 58°C 1, 72°C 2 30 72°C 7
extension 1. ACE primer DD insertion specific sequence primer 2
primer (ACE2) sense primer 5'- TGG GAC CAC AGC GCC CGC CAC TAC- 3', antisense primer 5'- TCG CCA GCC CTC CCA TGC CCA TAA- 3'10,11. 2% agarose gel 490 bp DNA band I allele, 190 bp D allele DD insertion specific sequence primer 2 335 bp DNA band (I allele) ID insertion, DD insertion (Figure 1). DD insertion specific sequence primer

(Figure 2)10,11.
The results were analyzed using the SPSS package version 10.0. Losartan was given 24-hour
infusions, followed by 24-hour saline infusions, and the differences in plasma
C-reactive protein (CRP) were evaluated using paired Student t-test. The
accompanying Student t-test, Chi-square test, and analysis of variance (ANOVA)
Kruskall-Wallis test were also performed, with p < 0.05 considered statistically
significant. The study findings were ±standard deviation ±standard deviation.
Figure 1. Agarose gel electrophoresis of PCR product with ACE1 primers

MM : molecular weight marker, II : insertion homozygote, ID : heterozygote, DD: deletion homozygote
Figure 2. Agarose gel electrophoresis of PCR product with ACE2 primers
MM : molecular weight marker, ID : heterozygote, DD: deletion homozygote, no band
III. S

1. S S S S S S

ου 47.8±12.4, ο 24 (34.3%), ο 46 (65.7%). ΙγΑ (IgA nephropathy) ο 24 (34.3%), ο 7 (10.0%), ο 3 (5.0%).
membranous glomerulonephritis ο 7 (10.0%), ο 3 (5.0%).
(focal segmental glomerulosclerosis) ο 3, ο 1, ο 1.
membranoproliferative glomerulonephritis ο 1, ο 1, ο 1.
(chronic glomerulonephritis) ο 35 (50.0%)
(Table 1).

2. Losartan

70 losartan, ο 12, ο 119.5±15.0mmHg, ο 24.
135.9±16.4mmHg, ο 12, ο 119.5±15.0mmHg, ο 24.
119.0±15.7mmHg, ο 12, ο 77.4±8.8mmHg, ο 24.
88.8±10.0mmHg, ο 12, ο 75.8±8.2mmHg.
75.8±8.2mmHg, ο 12, ο 75.8±8.2mmHg.
104.5±10.3mmHg, ο 12, ο 91.5±9.4mmHg,
ο 24, ο 90.2±9.2mmHg.

(Table 1).
losartan 

losartan 12 24 (p<0.05). 12 24 (p<0.05), 24 (p<0.05). (creatinine clearance) 62.9±26.7 ml/min/1.73m² 63.0±27.8 ml/min/1.73m² (p<0.05), 24 (p<0.05). 2243.0±1554.2mg 12 24 (p<0.05) (Table 2).

losartan 12 24 24 (p<0.05) (Figure 3).

3. losartan 12 (Table 3). 50 (15, 35), 20 (9, 11).
losartan 12 24
134.2±16.5mmHg 116.5±12.2mmHg, (p<0.05), 12 24
115.8±12.2mmHg 24 (p<0.05), 12 24
103.6±11.1mmHg 24
89.7±8.7mmHg, (96.5±9.8mmHg) (p<0.05), 24
(1.4±0.6mg/dL vs. 1.8±0.5mg/dL, p<0.05), 24
6.3±1.9mg/dL vs. 7.4±1.6mg/dL, p<0.05, 24
6.1±1.9mg/dL vs. 7.1±1.3mg/dL, p<0.05). (Table 3).

1147.4±1055.2mg 2288.2±1623.8mg (p<0.05). 24
1076.3±933.6(- 50.8±24.2%)mg, - 1169.5±985.5mg(58.2±31.7%)
- 3.1±586.2mg(- 1.3±23.0%), - 600.9±601.3mg(- 29.1±25.1%)(p<0.05) (Table 3).
4. ACE ஏசீ எதைப் பற்றியதே 1

ACE ஏசீ எதைப் பற்றியதே 20 (25% 8, 50% 18), ID 24 (25% 15, 50% 23) என்று காணப்பட்டது. DD சீரான ஆணால் 6 (25% 1, 50% 5) என்று காணப்பட்டது.

DD எணுக்களுக்கு பின்னர் II    136.9±17.3mmHg, ID    134.8±16.3mmHg, DD    138.3±17.2mmHg என்று காணப்பட்டது. DD     88.3±10.0mmHg, ID    88.4±9.4mmHg, DD    93.3±13.7mmHg என்று காணப்பட்டது. II     106.5±10.3mmHg, ID    103.8±9.2mmHg, DD    110.0±15.1mmHg என்று காணப்பட்டது.

DD எணுக்களுக்கு பின்னர் II    60.5±26.5 ml/min/1.73m², ID    61.8±25.7 ml/min/1.73m², DD    80.9±28.9 ml/min/1.73m² என்று காணப்பட்டது. 24 ss எணுக்களுக்கு II    2132.5±1374.9 mg, ID  2369.6±1729 mg, DD    1920.7±1203.3 mg என்று காணப்பட்டது.

5. ACE ஏசீ எதைப் பற்றியதே losartan 3 எதை

Losartan 3 எதை ACE ஏசீ எதைப் பற்றியதே 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 என்று காணப்பட்டது. 24 ss losartan எணுக்களுக்கு 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 என்ற சீரானதே காணப்பட்டது.
Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

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Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

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Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

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Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

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Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

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Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.

Losartan 12 - 24 hr. Mean level, 24 hr. Mean level, ACE inhibitors, Diuretics.
Table 1. Clinical characteristics of study subjects

<table>
<thead>
<tr>
<th></th>
<th>No. of patients(M:F)</th>
<th>Age(years)</th>
<th>Etiology of CRD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>70(24:46)</td>
<td>47.8±12.4</td>
<td>IgA nephropathy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24(34.3%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Membranous glomerulonephritis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7(10%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FSGS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3(4.3%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MPGN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1(1.4%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35(50%)</td>
</tr>
</tbody>
</table>

Data are expressed as mean±SD. M:male, F:female, CRD: chronic renal disease, MPGN: membranoproliferative glomerulonephritis, FSGS: focal segmental glomerulosclerosis.

Table 2. Clinical and biochemical changes during losartan treatment

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>12 weeks</th>
<th>24 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP(mmHg)</td>
<td>135.9±16.4</td>
<td>119.5±15.0*</td>
<td>119.0±15.7*</td>
</tr>
<tr>
<td>DBP(mmHg)</td>
<td>88.8±10</td>
<td>77.4±8.8*</td>
<td>75.8±8.2*</td>
</tr>
<tr>
<td>MAP(mmHg)</td>
<td>104.5±10.3</td>
<td>91.5±9.4*</td>
<td>90.2±9.2*</td>
</tr>
<tr>
<td>Sodium (mEq/L)</td>
<td>140.4±1.9</td>
<td>140.3±2.6</td>
<td>139.4±2.5</td>
</tr>
<tr>
<td>Potassium(mEq/L)</td>
<td>4.3±0.5</td>
<td>4.4±0.6</td>
<td>4.3±0.6</td>
</tr>
<tr>
<td>BUN(mg/dL)</td>
<td>20.1±8.9</td>
<td>21.4±10.3</td>
<td>20.8±8.6</td>
</tr>
<tr>
<td>Creatinine(mg/dL)</td>
<td>1.5±0.6</td>
<td>1.5±0.6</td>
<td>1.5±0.6</td>
</tr>
<tr>
<td>Protein(g/dL)</td>
<td>6.7±0.6</td>
<td>7.0±1.4</td>
<td>6.8±0.6</td>
</tr>
<tr>
<td>Albumin(g/dL)</td>
<td>3.9±0.4</td>
<td>4.0±0.4*</td>
<td>3.9±0.5</td>
</tr>
<tr>
<td>Cholesterol(mg/dL)</td>
<td>215.3±42.9</td>
<td>191.2±31.1*</td>
<td>183.9±30.3*</td>
</tr>
<tr>
<td>Triglyceride(mg/dL)</td>
<td>231.8±189.9</td>
<td>174.1±101.6*</td>
<td>182.9±134.2*</td>
</tr>
<tr>
<td>Uric acid(mg/dL)</td>
<td>6.6±1.9</td>
<td>6.5±1.9</td>
<td>6.3±1.8*</td>
</tr>
<tr>
<td>Urine sodium(mEq/day)</td>
<td>176.7±70.1</td>
<td>184.3±59.7</td>
<td>176.0±68.4</td>
</tr>
<tr>
<td>Urine potassium(mEq/day)</td>
<td>59.3±22.7</td>
<td>56.5±22.4</td>
<td>56.3±20.2</td>
</tr>
<tr>
<td>Urine protein(mg/day)</td>
<td>2243.0±1554.2</td>
<td>1473.3±1336.5*</td>
<td>1187.2±1582.1*</td>
</tr>
<tr>
<td>Ccr(ml/min/1.73m²)</td>
<td>62.9±26.7</td>
<td>62.3±28.1</td>
<td>57.9±22.3*</td>
</tr>
</tbody>
</table>

Data are expressed as mean±SD. SBP: systolic blood pressure, DBP: diastolic blood pressure, MAP: mean arterial blood pressure, Ccr: creatinine clearance

*: p <0.05 vs. baseline
Table 3. Comparison of changes in clinical, biochemical and urinary parameters during treatment between responders and nonresponders

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Responder 12 weeks</th>
<th>Responder 24 weeks</th>
<th>Nonresponder Baseline</th>
<th>Nonresponder 12 weeks</th>
<th>Nonresponder 24 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP (mmHg)</td>
<td>134.2±16.5</td>
<td>116.5±12.2*</td>
<td>115.8±12.2*</td>
<td>140.0±15.7</td>
<td>127.3±19.0</td>
<td>129.9±21.1</td>
</tr>
<tr>
<td>DBP (mmHg)</td>
<td>88.3±10.8</td>
<td>76.3±9.0</td>
<td>75.7±8.4</td>
<td>90.2±7.6</td>
<td>80.5±7.6</td>
<td>76.3±7.7</td>
</tr>
<tr>
<td>MAP (mmHg)</td>
<td>103.6±11.1</td>
<td>89.7±8.7*</td>
<td>89.0±8.6</td>
<td>106.5±8.5</td>
<td>96.5±9.8</td>
<td>94.2±10.4</td>
</tr>
<tr>
<td>Sodium (mEq/L)</td>
<td>140.2±1.8</td>
<td>140.0±2.4</td>
<td>139.5±2.3</td>
<td>141.0±1.9</td>
<td>140.8±3.1</td>
<td>139.1±3.0</td>
</tr>
<tr>
<td>Potassium (mEq/L)</td>
<td>4.3±0.4</td>
<td>4.4±0.6</td>
<td>4.2±0.5*</td>
<td>4.4±0.5</td>
<td>4.6±0.6</td>
<td>4.6±0.8</td>
</tr>
<tr>
<td>BUN (mg/dL)</td>
<td>19.1±8.9</td>
<td>20.2±9.9</td>
<td>19.8±8.3</td>
<td>22.5±8.8</td>
<td>24.6±10.8</td>
<td>24.0±9.1</td>
</tr>
<tr>
<td>Creatinine (mg/dL)</td>
<td>1.4±0.6</td>
<td>1.5±0.6</td>
<td>1.4±0.6*</td>
<td>1.7±0.7</td>
<td>1.7±0.6</td>
<td>1.8±0.5</td>
</tr>
<tr>
<td>Total protein (g/dL)</td>
<td>6.8±0.6</td>
<td>6.9±0.6</td>
<td>6.9±0.5*</td>
<td>6.6±0.6</td>
<td>7.2±2.5</td>
<td>6.5±0.7</td>
</tr>
<tr>
<td>Albumin (g/dL)</td>
<td>3.9±0.4</td>
<td>4.0±0.4</td>
<td>3.9±0.4</td>
<td>3.9±0.4</td>
<td>3.9±0.4</td>
<td>3.8±0.6</td>
</tr>
<tr>
<td>Cholesterol (mg/dL)</td>
<td>214.0±46.5</td>
<td>190.7±32.1</td>
<td>184.0±31.8</td>
<td>218.7±33.2</td>
<td>192.5±28.9</td>
<td>183.8±26.1</td>
</tr>
<tr>
<td>Triglyceride (mg/dL)</td>
<td>199.5±150.9</td>
<td>174.2±104.4</td>
<td>175.4±112.6</td>
<td>308.3±248.5</td>
<td>193.6±103.9</td>
<td>210.4±180.1</td>
</tr>
<tr>
<td>Cholesterol (mg/dL)</td>
<td>6.3±1.9*</td>
<td>6.3±2.0</td>
<td>6.1±1.9*</td>
<td>7.4±1.6</td>
<td>7.2±1.4</td>
<td>7.1±1.3</td>
</tr>
<tr>
<td>Creatinine clearance (ml/min/1.73m²)</td>
<td>64.7±26.7</td>
<td>63.9±30.2</td>
<td>60.9±22.5</td>
<td>56.9±26.8</td>
<td>56.9±19.2</td>
<td>48.3±20.1</td>
</tr>
</tbody>
</table>

Data are expressed as mean±SD. SBP: systolic blood pressure, DBP: diastolic blood pressure, MAP: mean arterial blood pressure, Ccr: creatinine clearance.

*: p <0.05 vs. nonresponder at same time period.
Table 4. Distribution of responders and nonresponders according to ACE genotypes

<table>
<thead>
<tr>
<th></th>
<th>II</th>
<th>ID</th>
<th>DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responder (%)</td>
<td>20(76.9)</td>
<td>26 (68.4)</td>
<td>4 (66.7)</td>
</tr>
<tr>
<td>Nonresponder (%)</td>
<td>6 (23.1)</td>
<td>12 (31.6)</td>
<td>2 (33.3)</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>38</td>
<td>6</td>
</tr>
</tbody>
</table>
Figure 3. Correlation between baseline proteinuria and changes in 24hr urine protein excretion after 12 weeks (A) and 24 weeks (B) of losartan treatment.

A)  
\[ r^2 = 0.318, p < 0.05 \]

B)  
\[ r^2 = 0.228, p < 0.05 \]
Figure 4. Mean reduction in 24hr urine protein excretion according to ACE genotypes
IV. 

...-....-

...-....-

(angiotensinogen)

decapeptide

octapeptide

II

II

15

II

II

15.

AT\textsubscript{1} AT\textsubscript{2}

losartan

AT\textsubscript{1}

losartan

AT\textsubscript{2}

2,17.

AT\textsubscript{1}

losartan

AT\textsubscript{2}

2,17.

kinin

...
ACE 13,14.

2. ACE 13,14.

ACE 13,14.

ACE 13,14.

Ruggenenti et al. 8 GISeN group 35, Marre et al. 18 ID[] DD[] ACE 26. 

Ruggenenti et al. 8 GISeN group 35, Marre et al. 18 ID[] DD[] ACE 26.
ACE inhibits the angiotensin II receptor, whereas losartan blocks the renin-angiotensin system at the angiotensin II receptor. ACE inhibition by DD inhibits the angiotensin II receptor, whereas losartan blocks the renin-angiotensin system at the angiotensin II receptor. ACE inhibition by DD inhibits the angiotensin II receptor, whereas losartan blocks the renin-angiotensin system at the angiotensin II receptor. ACE inhibition by DD inhibits the angiotensin II receptor, whereas losartan blocks the renin-angiotensin system at the angiotensin II receptor. ACE inhibition by DD inhibits the angiotensin II receptor, whereas losartan blocks the renin-angiotensin system at the angiotensin II receptor. ACE inhibition by DD inhibits the angiotensin II receptor, whereas losartan blocks the renin-angiotensin system at the angiotensin II receptor.
V. Discussion

Losartan was effective in reducing blood pressure 70% of the time. Losartan was compared to ACE inhibitors, losartan and losartan, losartan and losartan.

1. Losartan was compared to ACE inhibitors, ACE inhibitors, losartan, losartan.
2. Losartan was compared to ACE inhibitors, ACE inhibitors, losartan, losartan.
3. Losartan was compared to ACE inhibitors, ACE inhibitors, losartan, losartan.
4. ACE inhibitors were compared to ACE inhibitors, losartan, losartan, losartan.
ACE
Hypertension 1995;13:710- 711


1999;10:1669-1680


34.  ... angiotensin converting enzyme gene
plasminogen activator inhibitor-1 gene polymorphism. 2001;20:565-574

35. Orisio S. Gene polymorphism of the renin-angiotensin system and
Abstract

The effect of ACE gene polymorphism on the antiproteinuric effect of angiotensin II receptor antagonist in patients with non-diabetic chronic renal disease

Hoon-Young Choi

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(Directed by Professor Dae Suk Han)

Background. Renin-angiotensin system plays an important role in renal injury and in the progression of renal disease. Angiotensin II, a potent vasoconstrictor, has a key role in renal injury and in the progression of chronic renal disease of diverse causes. In every organ system, the biologic effects of angiotensin II are mediated through its interaction with specific receptors on cell membranes.

Angiotensin II receptor antagonist specifically inhibits angiotensin II-mediated physiologic responses such as systemic and renal vasoconstriction, sodium reabsorption by renal proximal tubule, and stimulation of aldosterone and adrenergic hormone release by the adrenal gland.
Angiotensin II receptor antagonist, losartan has been reported to have a significant antiproteinuric effect in patients with diabetic and non-diabetic renal disease.

This study was carried out ascertain whether angiotensin-converting enzyme (ACE) gene polymorphism might affect the renal response to angiotensin II receptor antagonist in non-diabetic proteinuric chronic renal patients.

Methods. Seventy patients with non-diabetic chronic renal disease with urine protein excretion greater than 500 mg/day were enrolled in this prospective study. Subjects were given losartan 50mg o.d. for first 12 weeks, and then 100mg o.d. and were followed up to 24 weeks.

Results. Twelve weeks and twenty-four weeks later, blood pressure, urinary protein excretion, total cholesterol, and triglyceride significantly decreased compared with baseline values. There was a significant correlation between the levels of baseline urinary protein excretion and the magnitudes of the reduction of urinary proteinuria excretion after treatment with angiotensin II receptor antagonist. Baseline blood pressure, BUN, serum creatinine, and urinary protein excretion were not different in the responder group (patients with 30% or more reduction of urinary protein excretion after losartan treatment) compared with the nonresponder group. Systolic blood pressure and
mean arterial pressure in the responder group were significantly less than the nonresponder group after twelve and twenty-four weeks of losartan treatment. Urinary protein excretion in the responder group was significantly lower than the nonresponder group after twelve weeks. There were no significant differences in blood pressure, urinary protein excretion, creatinine clearance, distributions of responders among three groups in accordance with ACE genotypes after angiotensin II receptor antagonist treatment.  

Conclusions. Our results suggest that angiotensin receptor antagonist, losartan significantly reduced blood pressure and proteinuria in patients with non-diabetic chronic renal disease. The magnitude of antiproteinuric effect of losartan was not influenced by ACE gene polymorphism. However, further large scale studies are required to confirm the issues regarding the ACE gene polymorphism and the antiproteinuric effects of angiotensin II receptor antagonist in non-diabetic chronic renal disease.

Key words: angiotensin II receptor agonist, antiproteinuric effect, angiotensin-converting enzyme gene polymorphism, non-diabetic chronic renal disease