

## 본태성 고혈압 환자에 대한 이베사탄(Irbesartan)의 유효성 및 안전성

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### The Efficacy and Safety of Irbesartan in Treating Essential Hypertension

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#### ABSTRACT

**Background :** Irbersatan, an orally active antihypertensive agent, effectively reduce blood pressure by directly blocking angiotensin receptors without any significant adverse effects. The purpose of this study is to evaluate the efficacy and safety of irbesartan in patients with mild to moderate hypertension. **Methods :** This study enrolled 83 patients who had diastolic pressure above 95 mmHg and below 110 mmHg on two measurements. Sixty eight patients were administered 150mg of irbesartan, an angiotensin II receptor blocker, daily for four weeks as an initial dosage. If the sitting diastolic pressure was equal to or greater than 90 mmHg after a 4 week treatment period, the dosage was doubled until the end of 8 weeks. Baseline pressures, antihypertensive effect, side effects, laboratory findings were compared before and after treatment. **Results :** Fourty two patients out of 53 patients having completed this study showed decreased blood pressure equal to or more than 5 mmHg of the sitting diastolic pressure (response rate = 79%). Twenty one patients out of 53 patients showed normalized blood pressure below 90 mmHg of the sitting diastolic pressure (normalization rate = 40%). The extent of decrease in diastolic and systolic blood pressure after eight week treatment was an average  $11.7 \pm 10.1$  mmHg and  $16.3 \pm 18.9$  mmHg, respectively ( $p < 0.05$ ). Nineteen ontoward side effects was observed in 17 patients out of 68 patients with medication (frequency of ontoward effects = 25%). Only one case with headache was considered to be related to the medication. Abnormal laboratory findings were observed in eight patients, and only one case with elevation of bilirubin and ALT levels was considered to be related to the medication. **Conclusion :** In conclusion, irbesartan is a safe and effective antihypertensive drug in patients with mild to moderate hypertension with tolerable side effects. (**Korean Circulation J 2000; 30(3):318-325**)

**KEY WORDS :** Irbesartan · Hypertension.

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서 론  
 Renin - angiotensin - system(RAS) , otensin , renin ACE aldosteron  
 , <sup>6)</sup> irbesartan ACE  
 angiotensin 가 <sup>7)</sup>  
 , , ,  
 renin 가 가 renin angio - irbesartan 8  
 tensinogen angiotensin ,  
 angiotensin - converting - enzyme(ACE)  
 angiotensin . angiotensin  
 aldosterone 가 Na  
 , <sup>1)</sup> RAS 1998 6  
 ACE RAS ACE 1 1998 9 30  
 angiotensin 18 2  
 가 95 mmHg 110 mmHg  
<sup>2)</sup> captopril 1970  
 ACE ACE 6  
 1 , (coronary artery bypass gr -  
<sup>3)</sup> ACE bradykin - aft)  
 in, substance P peptide , ,  
 , 가 ,  
<sup>4)</sup> ACE ,  
 가 200 mmHg , ,  
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 giotensin  
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 . 1993  
 angiotensin  
 losartan irbesartan, candesartan , 약물 투여 방법  
 sartan, eprosartan, valsartan <sup>5)</sup> screening wash - out , pl -  
 irbesartan AT1 가 acebo , wash - out  
 angiotensin  
 . irbesartan angio - 1

placebo placebo cast(RBC, WBC) screening , 2 8  
 8 12 1 1 1 2  
 (Fig. 1).  
 placebo  
 wash - out 가 2  
 placebo 2  
 95 110 mmHg 10 mmHg  
 wash - out 5 mmHg  
 8 irbesartan 1 1 1 (150 10 mmHg  
 mg) 8 12 4 5 mmHg 가  
 90 mmHg 1 1 2 (300 mmHg) 5 mmHg 가  
 4 90 mmHg  
 ( , , ACE 가  
 ) . 8  
 각종 검사 side effect profile  
 screening 가 side effect profile 가  
 , X 8  
 , 가  
 hemoglobin,  
 hematocrit, RBC, WBC platelet count, differen -  
 tial count , alanine tr -  
 ansaminase(ALT), aspartate aminotransferase(AST),  
 alkaline phosphatase, total protein, albumin, total  
 bilirubin, BUN, glucose, creatinine, uric acid, elec -  
 trolytes(Na, K, Cl, calium, phosphorus), total chol -  
 esterol , protein, glucose,

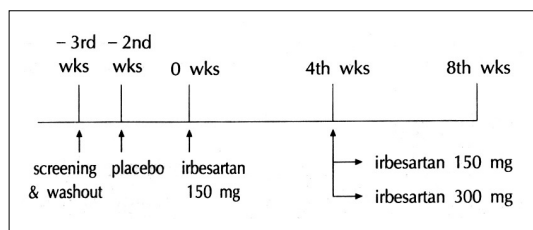


Fig. 1. The time schedule of clinical trial of irbesartan.

대상 환자의 임상적 특징  
 reening wash out 83 sc -  
 4 , placebo  
 11 , 가 68  
 68 8  
 가 57 , 11  
 가

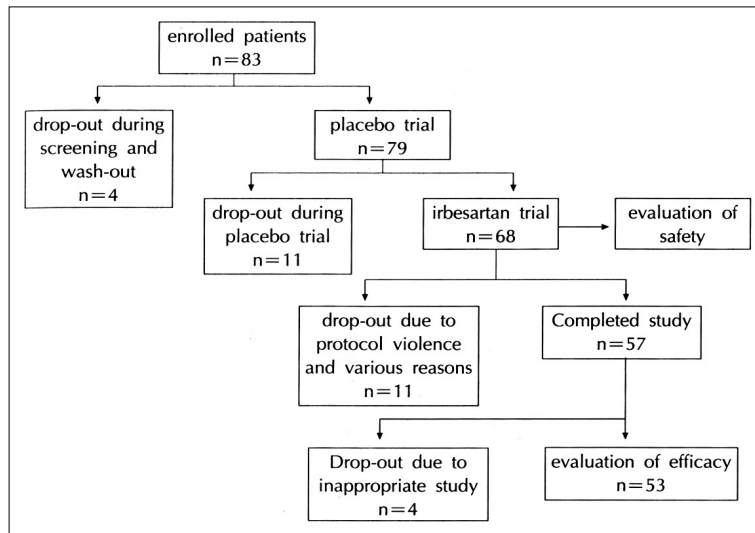


Fig. 2. The algorithm of clinical trial of irbesartan.

가 1 , 가 2 ,  
가 5 , 2 ,  
가 2 ,  
, follow - up 가 5 15 .  
11  
가 가 2  
, 3 , follow - up 가 4 ,  
가 2  
(Fig. 2). 4 65  
35 (54%) 가 1 300 mg .  
68  
2 66  
(Table 1). 28 (42%), 가 38  
(58%) . 20 가 1 (2%), 30 가 5  
(8 %), 40 가 10 (15%), 50 가 36 (55%),  
60 가 12 (18%), 70 가 2 (2%) 53.4  
± 9.4 . 1 가  
1 9 , 11 3  
4.0 ± 5.0 . 가 30  
(46%), 36 (54%) . 24 (36%)  
가  
가 . 45 (68%)  
screening  
11 (17%), 5  
(8%), 2가 가 9 (14%),  
가 18 (27%) . 46% 1 53

Table 1. Baseline clinical characteristics (n = 66)

	Umber of cases
Sex male	28 (42%)
female	38 (58%)
Mean age (yr-old)	53.4 ± 9.4
Mean duration of hypertension (yr)	4.0 ± 5.0
Body weight (kg)	66.4 ± 11.3
Family history of hypertension	30 (46%)
Presence of other medical history	24 (36%)
Previous pharmacological treatment	45 (68%)

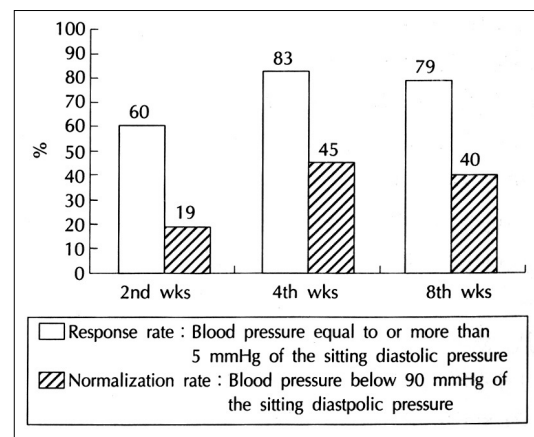


Fig. 3. Response rate and Normalization rate of irbesartan.

#### 유효성과 안전성

83 8  
57 3  
46% 1 53

가 68

가

가

8

5 mmHg 42

79%

90 mmHg 21

40% (Fig. 3).

104.0 ± 5.1

mmHg 8 92.2 ± 10.6 mmHg

11.7 ± 10.1 mmHg (p < 0.05).

11%) 가 2 4

96.2 ± 8.3 mmHg 91.2 ± 9.5 mmHg

7.0 ± 6.3 mmHg

12.8 ± 8.2 mmHg 가

(p < 0.05).

156.0 ± 15.2 mmHg 2, 4 8

141.2 ± 14.3 mmHg, 136.7 ± 15.6 mmHg,

138.5 ± 17.7 mmHg

15.0 ± 11.4 mmHg, 19.6 ± 13.7 mmHg 16.3

± 18.9 mmHg (p < 0.05).

2

, 4 8

. 4 8

(Fig. 4).

(p = NS).

8

26 27 가

104.0 ± 5.4 mmHg

8 91.2 ± 9.6 mmHg 12.8 ± 8.4 mmHg 가

103.9 ± 4.9 mmHg 8

93.2 ± 11.5 mmHg 10.7 ± 11.5 mmHg

가

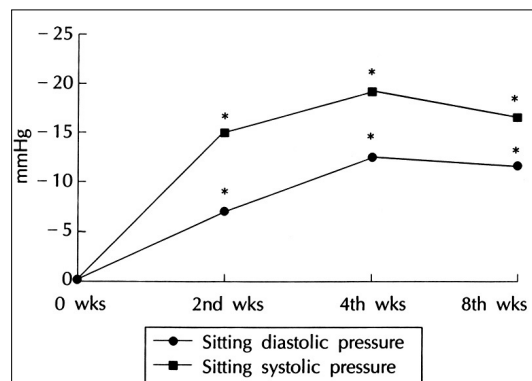


Fig. 4. Reduction of the blood pressure during irbesartan trial. \*p < 0.05 compared to baseline.

Table 2. The frequency of side effect profile (n = 68)

Side effect	Number of cases
Headache	4 ( 6%)
Fatigue	2 ( 3%)
Abdominal pain	2 ( 3%)
URI	2 ( 3%)
Musculoskeletal pain	1 ( 2%)
Weight loss	1 ( 2%)
Conjunctival injection	1 ( 2%)
Thirst	1 ( 2%)
Enteritis	1 ( 2%)
Chest pain	1 ( 2%)
Dizziness	1 ( 2%)
Dry cough	1 ( 2%)
General weakness	1 ( 2%)
Total	19 (25%)

153.1 ± 14.2 mmHg 8 134.7

± 16.7 mmHg 17.5 ± 16.8 mmHg 가

, 158.1 ± 15.8 mmHg 8

142.3 ± 18.2 mmHg 15.1 ± 19.4 mmHg 가

(p = NS).

#### Side effect profile

68 17

19 side effect 가 side effect

25% (Table 2).

가 가 4

**Table 3.** The abnormal laboratory test (n = 68)

The kinds of abnormal laboratory test	Number of cases
Hematology	Decreased platelet count 1 ( 2%)
	Increased WBC <sup>1</sup> 2 ( 3%)
Serum	Increased ALP <sup>2</sup> 1 ( 2%)
chemistry	Increased AST <sup>3</sup> , ALT <sup>4</sup> 1 ( 2%)
	Increased bilirubin, ALT 1 ( 2%)
Urinalysis	Increased urine RBC <sup>5</sup> 1 ( 2%)
	Increased urine blood 1 ( 2%)
Total	8 (12%)

1 : WBC = white blood cell

2 : ALP = alkaline phosphatase

3 : AST = aspartate aminotransferase

4 : ALT = alanine transaminase

5 : RBC = red blood cell

(6%) . 1

가 가

가 , 3 가

.

ACE 가

,

1

,

ACE

가 가 .

, , 3

가 .

가 .

가(Table 3)

platelet 1 , WBC

1 , ALP 1 , AST, ALT 1 , biliru -

bin ALT 1 , urine RBC 1 , urine

blood 1 8

, bilirubin ALT

가 가

가 .

2 8 가

hematocrit al -

bumin . hematocrit 41.0 ± 4.0%,

2 41.5 ± 4.1%(p<0.05), 8 40.7 ± 3.8%(p<

0.05) , albumin 가 4.64 ± 0.27

g/dL, 2 4.57 ± 0.28g/dL(p<0.05), 8 4.52

± 0.3g/dL(p<0.05) 가

가

.

8 가

neutrophil, calcium

potassium . Neutrophil 가 51.3 ± 8.7%,

8 53.8 ± 9.5%(p<0.05) 가

, calcium 가 9.4 ± 0.5 mg/dL, 8

9.3 ± 0.4 mg/dL(p<0.05)

. potassium 가 4.2 ± 0.3 mEq/L

(mMol/L), 8 4.4 ± 0.4 mEq/L(mMol/L)(p<0.05)

가

8

고 안

irbesartan 8

5 mmHg

79% ,

90 mmHg

21 40% .

irbesartan

8 - 11)

95 110 mmHg

irbesartan 8 12

9.7 12.3 mmHg,

12.1 16.4 mmHg

.

40%

50%

90 mmHg

90 mmHg

가 9 ,

cut - off va - 24 18 mmHg, 14 mmHg  
 lue 90 mmHg 30 .<sup>9)</sup> enalapril 10  
 (57%) mg 40 mg  
 가 angiotensin 12 irbesartan 75 mg  
 가 an - 300 mg 12 irbesar -  
 giotensin tan  
 가 18 mmHg 13 mmHg가 enalapril  
 angiotensin 18 mmHg  
 , Kassler - Taub 14 mmHg가  
 10) .<sup>16)</sup> aten -  
 irbesartan 300 mg losartan 100 olol, enalapril irbesartan .<sup>9)16)</sup>  
 mg losartan irbesartan side effect  
 가 - 8.7 mmHg - 11.7 25% 가  
 mmHg , 1  
 Oparil <sup>8)</sup> bilirubin ALT 1  
 irbesartan losartan . 1 (2%)  
 - 10.2 mmHg - 7.9 mmHg  
 irbesartan 가  
 hematocrit, albu -  
 가 min, neutrophil, calcium potassium  
 losartan  
 Belz <sup>12)</sup> Mazzolai <sup>13)</sup> in vitro ,  
 radioreceptor assay irbesartan losartan 가 가  
 가  
 losartan  
 가 losartan <sup>14)15)</sup> . ACE  
 90 mmHg  
 losartan 50 mg( 100 mg) 12  
 Kim <sup>14)</sup> . irbesartan  
 100.7 ± 9.4 mmHg 85.9 ±  
 9.1 mmHg , Park <sup>15)</sup> irbesartan  
 9.4 ± 2.7 mmHg 1 1 150 300 mg  
 at -  
 enolol(beta - blocker),<sup>9)</sup> enalapril(ACE inhibitor)<sup>16)</sup> 요 약  
 irbesartan  
 irbesartan 75 mg 연구대상 :  
 300 mg 24 Irbesartan AT1  
 19 mmHg, 15  
 mmHg가 atenolol 50 mg 100 mg angiotensin

가 .  
irbesartan

방 법 :  
2 가 95  
mmHg 110 mmHg  
83 angiotensin ir -  
besartan 1 150 mg 4  
90 mmHg 300  
mg 4 8  
, side effect profile,

결 과 :  
83 가가 가 53  
5 mmHg  
42  
79% , 90 mmHg  
21  
40% 8  
11.7 ± 10.1 mmHg( 11%)  
(p<0.05).  
16.3 ± 18.9 mmHg  
(p<0.05).  
1 68 17  
19 side effect가  
25 % 1  
8  
bilirubin ALT  
1 가 가  
가 .  
irbesartan

결 론 :

중심 단어 : Irbesartan.

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