

고혈압 환자에서 안지오텐신 전환효소 억제제에 의한 기침 발생의 위험인자

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Risk Factors of Angiotensin-Converting Enzyme Inhibitor-Induced Cough in Patients with Hypertension

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ABSTRACT

Background and Objectives : The reported incidence of angiotensin converting enzyme inhibitor-induced cough ranges widely from 1.3% to 44% in many studies, depending upon methods of data collection, analysis, symptom reporting, and race. Risk factors of ACEI-induced cough is not well recognized. We evaluated the incidence of ACEI-induced cough and risk factors including ACE gene polymorphism that partially determine ACE activity in hypertensive patients. **Materials and Method :** New hypertensive patients (N = 356, F : M = 196 : 160) from Jan. 1994 to Jul. 1998 at Seoul National University Hospital were prospectively prescribed ACEI and followed up for one year observing the occurrence of cough. Cough group is defined as reproduced cough after ACEI therapy without evidence of any other cause of cough and cough stops within 4 weeks after withdrawal. Non-cough group is defined as not developing cough during 12 months with ACEI. Differences between two groups are analyzed in clinical factors and ACE gene polymorphism. **Results :** Cough developed in 144 patients (40%, 144/356) after ACEI administration. The cough incidence was not statistically different between ACEIs ; 34% (19/58) for captopril, 38% (61/161) for enalapril, and 47% (64/137) for perindopril. In univariate analysis, the frequencies of female gender and non-smokers were significantly higher in the cough group than non-cough group (M : F = 43 : 101 vs 116 : 95, p<0.001, OR 2.87 ; non-smoker : smoker = 124 : 18 vs 166 : 46, p<0.05, OR 1.91, cough vs non-cough group, respectively). However, ACE gene polymorphism does not have an association with cough (I/I : I/D : D/D = 56 : 44 : 31 vs 74 : 76 : 37, p = NS ; I : D = 0.59 : 0.41 vs 0.60 : 0.40, p = NS, cough vs non-cough group, respectively). In multivariate analysis, female gender is the only significant risk factor for cough. Though adjusting of age, sex, and smoking status between two groups, ACE gene polymorphism was not associated with cough (II : ID : DD = 27 : 22 : 18 vs 23 : 30 : 14, p = NS). **Conclusion :** The incidence of ACEI-induced cough is higher in Koreans than that of previously reported in Caucasians. Our present study suggests The significant risk factors

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gression multinominal logistic re -
(p=0.031). ACE II :
ACE
p - value ID : DD가 56 : 44 : 31 74 : 76 : 37
<0.05 (p=0.42)(Table 1).
SPSS 9.0 ACE ACE
결 과 ()
144 (OR 2.89, 95% CI 1.83 4.50)(Table 2).
40.1%(144/356) ACE
27%(43/160),
51%(101/196) (p<0.0001).
가 가
15%(21/140) 15.3%(31/203)(p=0.95), 가
47.2% 46.9% 가 (p=0.97). 1 : 1 matching 가 134
ACE captopril, en - II, ID
alapril perindopril 19 : DD 27 : 22 : 18 23 : 30 : 14(p=
61 : 46 37 : 99 : 72 가 (p=0.15). 0.39) , I D 0.567 : 0.443
ACEI , 0.567 : 0.443(p=0.99)
가
가 (p=0.67). (Table 3).
가

Table 1. Baseline characteristics of cough vs non-cough group : univariate analysis : t-test done in case of continuous variables, Pearson's χ^2 done in case of categorical variables

N = 356	Cough = 144	Non-cough = 212	p value
Age	55.9 ± 11.7	57.3 ± 11.9	NS
Sex (M : F)	43 : 101	116 : 95	<0.0001
DM	21/140 (15.0%)	31/203 (15.3%)	NS
Smoking (yes : no)	18/124 (14.5%)	46/212 (21.7%)	0.031
ACEI MED			
CTP : ENL : PRDP	19 : 61 : 64	37 : 99 : 72	NS
: CCB : diuretics	40 : 52 : 32	64 : 88 : 42	NS
LVH (yes : no)	42 : 37 (47.2%)	68 : 77 (46.9%)	NS
f/u duration	25 ± 16 m	26 ± 12 m	NS
EF (baseline, %)	57.1 ± 11.9	51.8 ± 15.9	NS
PACE			
II : ID : DD	56 : 44 : 31	74 : 76 : 37	NS

Quantitative data are expressed as mean ± S.D. and qualitative data as number (percent)
ACEI : angiotensin caonverting enzyme inhibitor, CTP : captopril, EML : enalapril, PRDP : perindopril, : -blocker,
CCB : calcium channel blocker, PACE : polymorphism of angiotensin converting enzyme

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