Carbamazepine Epoxide : Effects of Other Antiepileptic Drugs on Carbamazepine Metabolism

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Background & Objectives : Carbamazepine-10, 11-epoxide(CBZ-E), an active metabolite of Carbamazepine(CBZ), has been proven to play a role in toxicity of this drug and also has antiepileptic effect in animal models. This study was designed to evaluate CBZ metabolism especially in case of polytherapy in Koreans.

Methods : We studied 133 patients who were managed with CBZ over three months in Seoul National University Hospital and Hanyang University Hospital from Jan. 1994 to May 1995. Seventy-one patients took CBZ only and 42 patients CBZ and other drugs including Phenytoin (DPH)(n=5), Valproate(VPA)(n=19), Phenobarbital(Pb)(n=11), and Vigabatrin(VGB)(n=7). And twenty patients took CBZ and two or more other drugs(CO group). The CBZ and its metabolites were measured using High Performance Liquid Chromatography(HPLC). Then the fraction of CBZ-E(CBZ-E to CBZ) of monotherapy group was compared to each polytherapy group. Statistical analysis was performed with t-test.

Results : In CBZ monotherapy group, mean CBZ-E fraction was 0.18(SD=0.11). It is not affected by patients' age, sex, and body weight but by carbamazepine daily total dose. Compared with this, CBZ-E fractions were higher in VPA, Pb, DPH and CO groups($p<0.001$), whereas no difference could be found with VGB($p>0.05$).

Conclusion : CBZ-E fraction is higher when combined with VPA, Pb, or DPH than in CBZ monotherapy group. Therefore in cases of polytherapy with CBZ, unexpected side effects may appear.