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제 목	카페인 함유 의약품과 출혈성 뇌졸중 발생에 관한 환자-대조군 연구 Caffeine in Pharmaceutical Products and the Risk for Hemorrhagic Stroke: A Case-Control Study				
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Background: Although consumers have frequently used medicines containing caffeine, most of them don't notice these medicines contain caffeine. Caffeinated drugs are suspected to increase the risk for hemorrhagic stroke through blood pressure elevation and increased cardiac output.

Objectives: This study was performed to assess the association between caffeine in pharmaceutical products and the risk for hemorrhagic stroke.

Methods: We conducted a prospective nationwide multi-center matched case-control study, which was named Acute Brain Bleeding Analysis (ABBA) study. Between October 2002 and March 2004, patients aged 30 to 84 years with hemorrhagic stroke were recruited from 33 general hospitals, spreading all over the nation. Two controls were matched to each case for age within five years and same gender, one as a hospital control and the other as a community control. Information was obtained by trained research nurses using standardized questionnaire. Main analysis was conducted for exposure to caffeinated drugs within three days by calculating odds ratios (ORs) and their 95% confidence intervals (CIs) using conditional logistic regression model.

Results: Nine hundred ninety-six patients completed the interview within 30 days after the stroke onset, and 940 patients among them were successfully matched to 1,880 controls. Statistical analyses were performed for these 2,820 participants. Forty-six cases and forty-four controls took caffeinated medicines within three days before the index date. After adjusting for age defined by decades, a history of hypertension, a family history of stroke, salt intake, and recent upper respiratory tract infection, OR of caffeinated medicines for hemorrhagic stroke was 2.41 (95% CI, 1.50 to 3.87). However, adjusted OR of caffeine-free medicines with the same indications as caffeinated medicines was 0.92 (95% CI, 0.54 to 1.57). By amounts of daily coffee intake, adjusted ORs of caffeinated medicines for hemorrhagic stroke were 4.18 (95% CI, 1.22 to 14.36) and 9.44 (95% CI, 2.02 to 44.06) in those who don't drink coffee daily and those who drink two or more cups of coffee daily respectively, while 0.48 (95% CI, 0.06 to 3.82) in those who drink one cup of coffee daily.

Conclusions: These findings suggest that caffeine in pharmaceutical products may increase the risk for hemorrhagic stroke, especially in persons who rarely drink coffee or heavy coffee drinker.