

Introduction

Nicotine may exert a neuroprotective effect on the injured brain through modulation of the cholinergic anti-inflammatory pathway. While cigarette smoking has been previously investigated as a risk factor for ICH, there is a paucity of clinical data examining its post-ICH effects. The aim of this study was to evaluate the relationship between cigarette smoking and outcomes in patients enrolled in the intracerebral hemorrhage outcomes project (ICHOP).

Methods

From January 2009 - November 2017, consenting adult patients (aged 18 years) admitted to the Columbia University Medical Center with spontaneous ICH, were prospectively enrolled in ICHOP. Smoking patterns were categorised as non-smoker, past smoker (no tobacco for 12 months prior to admission) and current smoker (tobacco in 12 months prior to admission). The primary outcome was good functional outcome (90 day modified Rankin Scale [mRS] 2). Secondary outcomes were excellent functional outcome (90 day mRS 0-1), Barthel Index, 14-day and 90-day mortality.

Results

Of 716 enrolled patients, 654 had sufficient data for inclusion, comprising 478, 102 and 74 patients in the non-smoker, past smoker and current smoker groups, respectively. No difference in the rate of the primary outcome was observed (adjusted OR=2.546 [0.905, 7.162]; p=0.077 and adjusted OR=0.997 [0.336, 2.638]; p=0.995 for current and past smokers, respectively). Univariate comparisons revealed current smoking status to be associated with increased odds of excellent outcome (OR=3.206; [1.490, 6.896]; p=0.003). This did not remain significant in the multivariate model (adjusted OR=1.507 [0.600, 3.876]; p=0.241). Mortality rates did not differ between the three groups.

Conclusions

Cigarette smoking does not appear to be associated with decreased odds of 90-day good functional outcome, excellent functional outcome 14-day mortality or 90-day mortality. It may, in fact, be associated with trends towards improved outcomes in patients with spontaneous ICH. Significant differences in the clinical risk profiles that exist between smokers and non-smokers presenting with ICH may explain the observed trend towards improved functional outcomes among current smokers. Further prospective studies may be warranted to elucidate the strength and mechanism of association between smoking and ICH outcomes.

Learning Objectives

By the conclusion of this session, participants should be able to 1) Discuss the effects of cigarette smoking on outcomes in the setting of intracerebral hemorrhage. 2) Become familiar with the literature surrounding the use of nicotine as a treatment for hemorrhagic stroke.

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