# Preadmission beta-blockers are associated with decreased incidence of cerebral vasospasm in aneurysmal subarachnoid hemorrhage

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## Introduction

Vasospasm is a frequent complication of aneurysmal subarachnoid hemorrhage (SAH), with a significant impact on disease course. The effect of beta-blockers on the occurrence and severity of vasospasm has not been previously studied. The purpose of the present study was to assess the impact of preadmission beta-blockers on the incidence of vasospasm following SAH.

## Methods

The study population included 211 consecutive patients treated for aneurysmal SAH at Jefferson Hospital for Neuroscience. The occurrence of vasospasm was assessed by serial transcranial Doppler and/or the need for endovascular intervention in the event of neurological deterioration refractory to medical therapy. Multivariate logistic regression analysis was performed to determine the predictors of vasospasm

## Results

The proportion of patients with any mean flow velocity >120 cm/sec was 22% in patients taking prehospital beta-blockers versus 58% in those not taking prehospital beta-blockers (p=0.003). Likewise, the proportion of patients with any mean flow velocity >200 cm/sec was 3.7% in patients taking prehospital beta-blockers versus 18.4% in those not taking prehospital beta-blockers (p=0.02). In multivariate analysis, preadmission beta-blockers (OR 4.5; p=0.002) and lower Hunt and Hess grades (OR 3.7; p<0.001) were independent negative predictors of vasospasm. Fourteen patients required an endovascular intervention for medically refractory vasospasm; none of these patients were taking prehospital beta-blockers (p<0.05).

## Conclusions

The results of this study suggest that preadmission beta-blockers are associated with decreased incidence of cerebral vasospasm in patients with aneurysmal SAH. Beta-blockers may be a promising therapeutic avenue for vasospasm.

## Learning Objectives

To understand the potential benefits of Beta blockers in preventing vasospasm in subarachnoid hemorrhage patients.

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