

Category : **Brain: cerebro-vascular accidents**

A203 - In patients post endovascular coiling for subarachnoid haemorrhage an increase in systolic arterial pressure is associated with increased risk of symptomatic cerebral vasospasm.

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Introduction:

Cerebral vasospasm is the classic cause of neurological deterioration after aneurysmal subarachnoid haemorrhage (SAH) and contributes to morbidity and mortality. Predicting the onset of cerebral vasospasm remains a challenge. Recent research suggests an association between vasospasm and arterial hypertension, thus rendering changes in blood pressure (BP) a candidate for predicting increased risk of cerebral vasospasm. We investigated for a correlation between arterial hypertension following SAH and the onset of symptomatic cerebral vasospasm.

Methods:

This was a retrospective cohort study of coiled aneurysmal SAH patients between January 2017 and June 2020 in Cork University Hospital. Post coiling 4-hourly BP readings were collected up to day 9 or discharge. Symptomatic cerebral vasospasm was defined as a focal neurologic deficit or decrease of > 1 point on the Glasgow Coma Scale lasting > 1 hour, non-attributable to other causes. Logistic regression analysis was performed for all the BP readings with adjustment for age, sex, presence of hydrocephalus and history of hypertension.

Results:

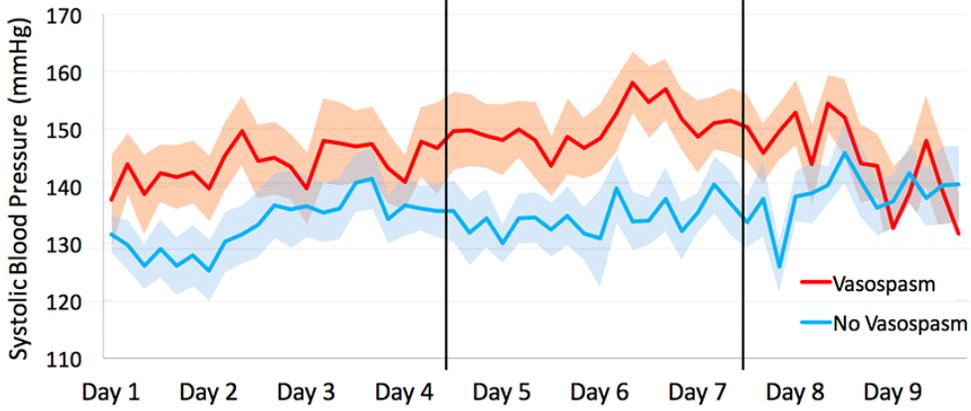
56 patients were included in the analysis, 21 developed vasospasm (37.5%). Mean day of vasospasm onset was day 6 (± 2) post-coiling. A 10mmHg increase in systolic BP was associated with an increased risk of cerebral vasospasm {Odds Ratio (OR)=1.63; 95% confidence interval (CI) 1.04-2.6; p-value<0.05}. The association was stronger in patients with pre-existing hypertension {OR=2.29; 95% CI 1.1-4.77; p-value <0.05}. Cubic spline analysis showed a positive linear relationship between systolic BP and predicting the risk of vasospasm. No significance was found in diastolic or mean arterial pressure.

Conclusion:

An increase in systolic BP post coiling for SAH correlated with increased risk for cerebral vasospasm. Systolic BP may be of use in anticipating patients at increased risk for vasospasm, thereby prompting closer monitoring and earlier therapeutic intervention.

Image :

1a)



1b)

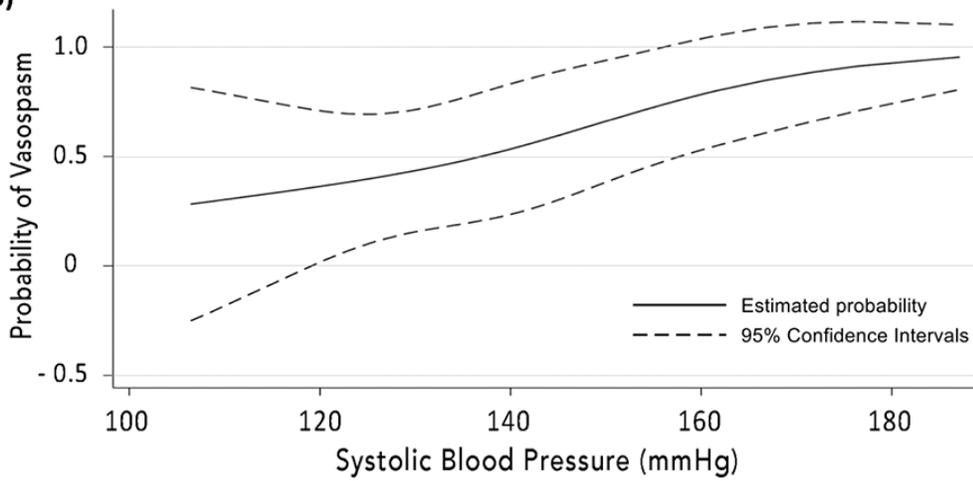


Figure 1a. Systolic blood pressure readings across study period in vasospasm (red) versus non-vasospasm (blue) patients with line shading representing 95% confidence interval. Pronounced significant difference seen in days 5 to 7. Figure 1b. Cubic spline graph with 3 knots representing the adjusted probability of vasospasm at different systolic blood pressure values. This model suggests a linear relationship between the probability of vasospasm and systolic blood pressure.