Predictors for venous-thromboembolism in patients with Aneurysmal subarachnoid hemorrhage.

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Introduction

Venous thromboembolism (VTE) is a significant cause of morbidity and mortality in patients presenting with a ruptured aneurysm and is a common complication in neurocritical care.

Objective

To identify clinical factors that could predict VTE during the hospitalization in patients presenting with an aneurysmal Subarachnoid Hemorrhage (aSAH).

Methods: (Retrospective)

All patients presenting with aSAH who underwent clipping or coiling between 12/2001 and 12/2013 were reviewed.

Univariate and multivariate models were run to determine the best predictor of VTE among variables such as demographics, Hunt & Hess grade, type of surgery, PICC-line status, and pre-op/post-up VTE prophylaxis.

Results

On multivariate analysis (adjusting for Hunt and Hess), the following variables remained independent predictors for VTE:

- LOS >14 days
- PEG tube
- Mechanical ventilation >96 hours
- Cerebral edema
- Decubitus ulcer
- Pneumonia

Patients who received subcutaneous Heparin post-operatively showed an unexpected trend towards VTE (9.4% vs. 4.6%,p=0.058). There were no differences in VTE rates among patients who received clipping or coiling.

Table 1: Patient Demographics

	VTE	No-VTE	P-value
Age	58 (47-65)	54 (45-62)	0.19
Female	16 (64)	265 (70.3)	0.51
Diabetes Mellitus	3 (12)	43 (11.4)	0.9
Hypertension	14 (56)	216 (57.3)	0.9
Stroke/TIA	0 (0)	8 (2.1)	0.5
CAD	5 (20)	43 (11.4)	0.2

Table 2: Clinical Factors

	VTE (n=25)	No-VTE (n=377)	p-Value
Length of stay >14 days	25 (100)	170 (45.1)	<0.0001
PEG tube	15 (60)	60 (15.9)	<0.0001
Ventilation >96 hours	16 (64)	99 (26.3)	<0.0001
Blood transfusion	5 (20)	32 (8.5)	0.05
Hunt & Hess Median (IQR)	3 (2-3)	3 (2-4)	0.04
Cerebral Edema	9 (36)	40 (10.6)	0.0002
Hydrocephalus	13 (52)	98 (26)	0.005
Decubitus	4 (16)	7 (1.9)	<0.0001
PICC line	13 (52)	109 (28.9)	0.02
Enteral nutrition	19 (76)	148 (39.3)	0.0003
Pneumonia	9 (36)	64 (17)	0.017

Conclusions

Knowledge of predictors of VTE in aSAH may aid in developing preventative strategies in this critically ill population.

Remarks

Our results suggest potential benefit in early identification of these clinical factors to prevent and to decrease the risk of developing VTE after rupture of an aneurysm.

Our conclusions should be tempered by the retrospective nature of this single-institution study, the small sample size, and the heterogeneous VTE prophylaxis regimens used over time.

Larger prospective observational studies across multiple institutions are warranted.