Mild Elevations of INR Are Not Associated with Significantly Increased Risk in Coumadin-associated Subdural Hematoma

Marie Roguski MD; Julian K. Wu MD
Department of Neurosurgery, Tufts Medical Center

Introduction

A primary goal in the treatment of patients with coumadin - associated subdural hematoma (SDH) is reversal of coagulopathy with fresh frozen plasma and vitamin K. Achieving the traditional target INR of 1.3 within 24 hours is often difficult and exposes high-risk patients to risks of volume overload and thromboembolic complications. This study evaluates the risk of mild elevations of INR from 1.31-1.69 in patients presenting with coumadin-associated SDH.

Methods

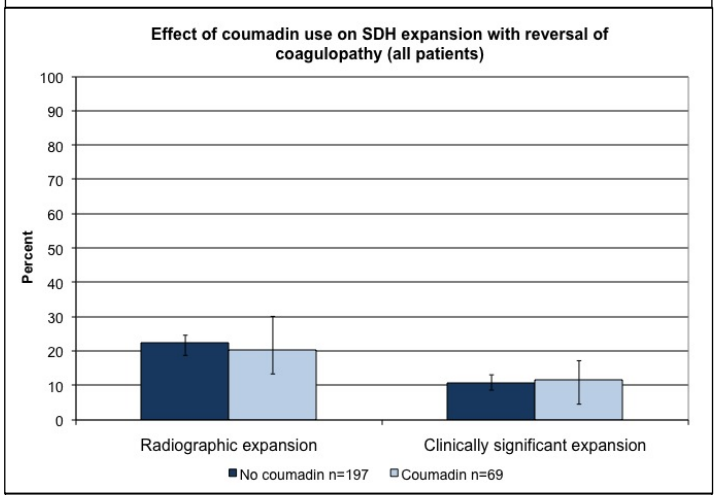
69 patients with coumadin-associated SDH and 197 patients with non-coumadin-associated SDH treated at a single institution from January 2005 through January 2012 were retrospectively identified. Charts were reviewed for age, associated injuries, neurological status at presentation, size and chronicity of SDH, associated midline shift, INR at admission and at hospital day 1 (HD1), concomitant aspirin and Plavix use, platelet count, and for medical comorbidities. Patients were stratified according to use of coumadin and by INR at HD1 (INR 0.8 -1.3, 1.31-1.69, 1.7-1.99, and >2). The groups were evaluated for differences in rate of radiographic expansion of SDH and for differences in rate of SDH expansion resulting in death, unplanned procedure, and/or readmission (considered to be clinically significant expansion).

Results

Key background clinical features of the groups are shown in column 2. There were no differences in size, chronicity, or associated midline shift between the groups (data not shown). There were no differences in rates of radiographic expansion or clinically significant expansion of SDH between patients not on coumadin and those on coumadin (22.3% vs 20.3%, p=0.87; 10.7% vs 11.6%, p=0.83), but the rate of medical complications was significantly higher in the coumadin subgroup (26.1% vs 13.3%, p=0.02). For coumadin-associated SDH, there was no difference between radiographic and significant expansion for patients reversed to a HD1 INR between 0.8-1.3 and 1.31-1.69 (22.5% vs 20%, p=1; 15% vs. 10%, p=0.71).

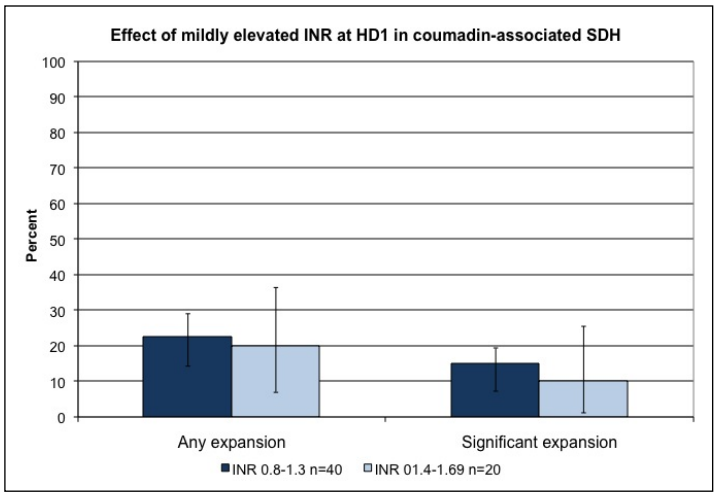
Background features by anticoagulation status

	No coumadin	Coumadin	p-value
N	197	69	
Mean age (years, 95% CI)	69.1 (66.6-71.5)	75.6 (73.4-77.9)	**0.003**
Male	58%	54.4%	0.67
Trauma	96.4%	85.3%	**0.0032**
Skull fracture	9.7%	0%	**0.0048**
C-spine injury	7.7%	4.4%	0.418
Loss of consciousness	38.3%	21.9%	**0.021**
Neurological deficit	25.9%	18.8%	0.257
Median GCS (10th-90th percentile)	15 (13-15)	15 (14-15)	0.626
Mean platelet count (thousands, 95% CI)	205 (192-217)	214 (196-232)	0.418
Aspirin use	29.9%	29.4%	1
Plavix use	8.1%	4.4%	0.418
Medical comorbidities	61%	100%	



Background features of patients with coumadin-associated SDH by HD1 INR

	INR 0.8-1.3	INR 1.31-1.69	p-value
N	40	20	
Mean age (years, 95% CI)	76.7 (74.1-79.3)	78.3 (74.3-82.3)	0.476
Male	45%	63.2%	0.267
Trauma	80%	100%	**0.045**
C-spine injury	5%	0%	0.548
Loss of consciousness	21.1%	22.2%	1
Neurological deficit	22.5%	15%	0.734
Median GCS (10th-90th percentile)	15 (13-15)	15 (14-15)	0.56
Mean INR at admission (mean, 95% CI) Range of INR at admission Distribution of INR (25th-75th percentile)	3.7 (2.8-4.6) 1.4-12 2.0-3.6	3.0 (2.0-3.9) 1.5-10 1.7-3.5	0.296
Mean platelet count (thousands, 95% CI)	215 (191-238)	213 (185-241)	0.93
Aspirin use	30.8%	15%	0.224
Plavix use	5%	5%	1



Conclusions

Mild INR elevations of 1.31-1.69 in coumadin-associated SDH are not associated with a markedly increased risk of radiographic or clinically significant expansion of SDH. This result implies that full reversal of INR to less than 1.3 may be more aggressive than necessary and may expose patients to excess risk.

References

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