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Aspirin May Be Adequate for Venous Thromboembolic Event Prophylaxis after Revision Hip and Knee Arthroplasty

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INTRODUCTION

The optimal prophylaxis for prevention of venous thromboembolic events (VTE) after total hip arthroplasty (THA) and total knee arthroplasty (TKA) remains unknown.(1) Current studies focus on primary arthroplasty and there are little to no data on the ideal prophylaxis for VTE following revision arthroplasty.(2) Revision surgery, due to its complexity, longer operative time, higher risk of bleeding and infection differs from primary arthroplasty.(3) The objective of this study was to evaluate whether aspirin, known to be effective for prevention of VTE after primary arthroplasty, is also effective against such events following revision THA and TKA.

MATERIALS AND METHODS

We studied 2,997 consecutive patients who underwent revision THA and TKA and were treated with either aspirin (534 patients) or warfarin (2,463 patients) between 2005 and 2013. In all patients, aspirin or warfarin was initiated immediately after the surgery and continued for 6 weeks. Intermittent pneumatic compression devices were applied immediately after the surgery and used throughout the hospital stay and patients were mobilized beginning the day of surgery. For patients in whom warfarin was administered, levels were closely monitored and doses adjusted for a goal INR of 1.8-2.0. Data on the incident of symptomatic VTE, bleeding events, and mortality were retrieved from our prospectively-collected database. Multivariate analysis was performed to isolate the role of anticoagulation in the prevention of VTE and its influence on complications.

RESULTS

The incidence of symptomatic VTE was significantly higher in the warfarin group at 1.75% (43/2,463) compared with 0.56% (3/534) in the aspirin group [odds ratio (OR) 3.2; 95% confidence interval (CI)1.03-16.3; p=0.03]. Two patients (0.4%) in the aspirin group were diagnosed with symptomatic deep venous thrombosis (DVT) compared with 23 (0.9%) in the warfarin group. One patient (0.2%) in the aspirin group was diagnosed with symptomatic pulmonary embolism (PE) compared with 24 (0.8%) in the warfarin group. One patient from the warfarin group had a fatal PE. There was a higher rate of bleeding events (either local hematoma requiring reoperation or bleeding to other organs) with warfarin (37 patients, 1.5%) compared with aspirin (2 patients 0.4%) (p=0.02; OR 4.1; 95% CI 1.2-34.0).

TABLES 1 & 2

	VTE	No VTE	p-value
Gender (male)	48.9%	45.4%	0.77
Age*	70 (11)	65 (12)	0.001
BMI*	29.5 (6.2)	30.0 (6.6)	0.56
Knee vs hip joint	45.6%	37.7%	0.36
CCI score 0	43.5%	61.0%	0.005
CCI score 1	28.3%	22.9%	
CCI score 2	17.3%	9.4%	
CCI (score of 3 or more)	10.9%	6.7%	
Duration of surgery (minutes)*	121 (77)	122 (49)	0.38
PJI as indication	15%	10%	0.13

Table 1: Bivariate analysis comparing potential confounding factors for patients that had VTE with those that did not have VTE. VTE=Venous thromboembolic event; BMI=Body mass index; CCI=Charlson comorbidity index; PJI=Periprosthetic joint infection. * Mean (Standard Deviation)

		Odds Ratio	95% confidence interval	p-value
Any VTE	Warfarin vs Aspirin	2.92	0.90-9.45	0.074
	Age/year	1.04	1.01-1.06	0.0057
	Charlson comorbidity index	1.20	1.01-1.43	0.040
Any Major Bleeding	Warfarin vs Aspirin	2.13	0.46-9.96	0.37
	calendar year	0.86	0.75-0.99	0.042
	Charlson comorbidity index	1.30	1.08-1.57	0.0060
Mortality	Warfarin vs Aspirin	1.09	0.13-9.25	0.93
	Charlson comorbidity index	1.70	1.34-2.16	< 0.0001

Table 2: Logistic regression analysis for the evaluation of VTE prophylaxis and other factors on the occurrence of any VTE, major bleeding and mortality. VTE=Venous thromboembolic event.

FIGURE 1

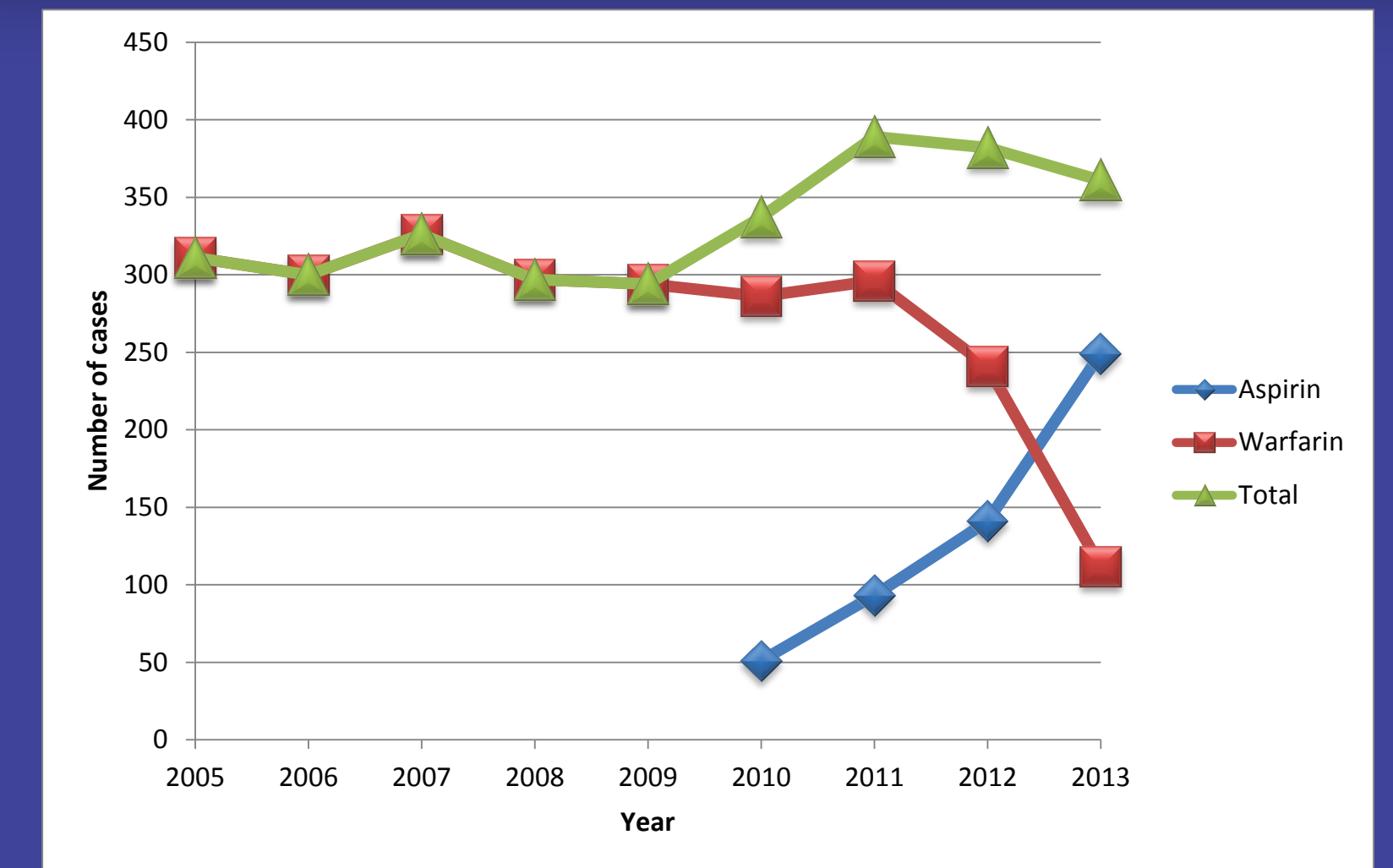


Figure 1: The distribution of revision patients in our cohort receiving aspirin vs. warfarin

DISCUSSION

To our knowledge, this study is the first of its kind to demonstrate that aspirin is a viable option for prevention of VTE following revision arthroplasty. Administration of aspirin to these patients, at worst, should be expected to reach the same efficacy as warfarin and may reduce the risk for bleeding events. While aspirin is a viable chemoprophylaxis for the majority of patients, patients at much higher risk of VTE, may require more potent thromboprophylaxis. Further research is warranted to stratify risk factors and identify patients at higher risk of VTE prior to surgery so that appropriate prophylaxis can be administered.

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