



Prevalence of iliac compression syndrome in patients with deep vein thrombosis



Hathamon Chonwarangkoon¹, Sasiprapa Rongthong², Chinnarat Bua-Ngam², Thanakrit Piyajaroenkij¹, Pichika Chantrathammachart¹, Teeraya Puavilai¹, Pimjai Niparuck¹, Pantep Angchaisuksiri¹, Kochawan Boonyawat¹

¹Department of Medicine, Faculty of Medicine Ramathibodi Hospital, Mahidol University
²Department of Radiology, Faculty of Medicine Ramathibodi Hospital, Mahidol University

BACKGROUND

Iliac compression syndrome (ICS), also known as May-Thurner syndrome (MTS), results from compression of the left common iliac vein (CIV) by the overlying right common iliac artery. The true prevalence of ICS remains unknown.

OBJECTIVE

To study the prevalence of ICS in patients with deep vein thrombosis (DVT) of the legs and to evaluate the incidence of recurrent DVT and post-thrombotic syndrome (PTS) in ICS patients.

METHODS

A retrospective study was conducted in Ramathibodi hospital. From January 2015 to December 2024, patients diagnosed with DVT who underwent imaging either CT or MRI of the lower abdomen were included. The imaging studies were reviewed by radiologists. The widest and narrowest diameters of the left CIV were measured. ICS was diagnosed when stenosis of the left CIV exceeded 50% in lumen diameter.

RESULTS

Among 180 patients included, the prevalence of ICS was 37.2% (67/180). In ICS patients, the median age was 58 years and 62% were female. Left leg DVT was more frequent in ICS patients compared to non-ICS patients (62.7% vs. 23.9%; P = 0.012). Most patients (74.6%) presented with leg swelling. Three most common DVT risk factors were immobilization, obesity, and active malignancy (31%, 25%, and 14%, respectively). There was no significant difference in iliac vein involvement (34.3% vs. 22.1%; P = 0.073) or extensive DVT (64.2% vs. 62.0%; P = 0.765). Hormonal use was significantly higher in ICS compared to non-ICS patients (4.5% vs. 0%; P = 0.023). Recurrent DVT was more frequent in ICS patients (17.9% vs. 4.4%; P = 0.003). There were no differences in pulmonary embolism (13.4% vs. 20.4%; P = 0.243) or PTS (4.5% vs. 1.8%; P = 0.302) between ICS and non-ICS patients.

Table 1. Baseline characteristics of 180 patients with DVT

Variables, %	All patients, % (n=180)	Iliac compression syndrome, % (n=67)	Non-iliac compression syndrome, % (n=113)	P-value
Age, years (median, IQR)	68.0 (55.5–76)	58.0 (46–72)	71.0 (61–79)	<0.001
Female	117 (65.0)	43 (64.2)	74 (65.5)	0.86
Affected leg				
Left	91 (50.6)	42 (62.7)	49 (43.4)	0.01
Right	65 (36.1)	16 (23.9)	49 (43.4)	0.01
Both	24 (13.3)	9 (13.4)	15 (13.3)	0.98
Symptoms at presentation				
No symptom	26 (14.4)	12 (17.9)	14 (12.4)	0.31
Swelling	140 (77.8)	50 (74.6)	90 (79.7)	0.43
Pain	6 (3.3)	3 (4.5)	3 (2.7)	0.51
Dyspnea	8 (4.4)	2 (3.0)	6 (5.3)	0.46
Desaturation	1 (0.6)	0 (0.0)	1 (0.9)	0.44
Location				
Iliac DVT	3 (1.7)	2 (3.0)	1 (0.9)	0.29
Femoral or popliteal DVT	52 (28.9)	16 (23.9)	36 (31.9)	0.25
Tibial or peroneal DVT	12 (6.7)	6 (9.0)	6 (5.3)	0.34
Extensive DVT*	113 (62.8)	43 (64.2)	70 (62.0)	0.77
Iliac vein involvement				
Yes	48 (26.7)	23 (34.3)	25 (22.1)	0.07
No	132 (73.3)	44 (65.7)	88 (77.9)	
Diagnostic modality				
Abdominal CT scan	131 (72.8)	46 (68.7)	85 (75.2)	0.34
CT angiography	29 (16.1)	16 (23.9)	13 (11.5)	0.03
MRI	19 (10.6)	4 (6.0)	15 (13.3)	0.12
MR angiography	1 (0.6)	1 (1.5)	0 (0.0)	0.19
Risk factors				
No risk factor	30 (16.7)	9 (13.4)	21 (18.6)	0.37
Previous VTE	16 (8.9)	6 (9.0)	10 (8.9)	0.98
Obesity	72 (40.0)	25 (37.3)	47 (41.6)	0.57
Major surgery	12 (6.7)	5 (7.5)	7 (6.2)	0.74
Immobilization	79 (43.9)	31 (46.3)	48 (42.5)	0.62
Hormonal use	3 (1.7)	3 (4.5)	0 (0.0)	0.02
Long distance travel	1 (0.6)	1 (1.5)	0 (0.0)	0.19
Autoimmune disease	20 (11.1)	8 (11.9)	12 (10.6)	0.79
Hereditary thrombophilia	2 (1.1)	1 (1.5)	1 (0.9)	0.71
Active malignancy	37 (20.6)	14 (20.9)	23 (20.4)	0.93
Lower extremities fracture	9 (5.0)	3 (4.5)	6 (5.3)	0.80
Treatment				
Deny treatment	2 (1.1)	1 (1.5)	1 (0.9)	0.71
Anticoagulants				
Low molecular weight heparin	46 (25.6)	16 (23.9)	30 (26.6)	0.69
Vitamin K antagonist	85 (47.2)	31 (46.27)	54 (47.8)	0.84
Direct oral anticoagulant	42 (23.3)	17 (25.4)	25 (22.1)	0.62
IVC filter	4 (2.2)	1 (1.5)	3 (2.7)	0.61
Endovascular stent	1 (0.6)	1 (1.5)	0 (0.0)	0.19

*Extensive DVT defines as thrombus connecting to 2 or more segments of the inferior vena cava (IVC), iliac vein, femoral vein, or popliteal vein.
Abbreviations: DVT, deep vein thrombosis; CT scan, computerized tomography scan; MRI, magnetic resonance imaging; VTE, venous thromboembolism; IVC, inferior vena cava.

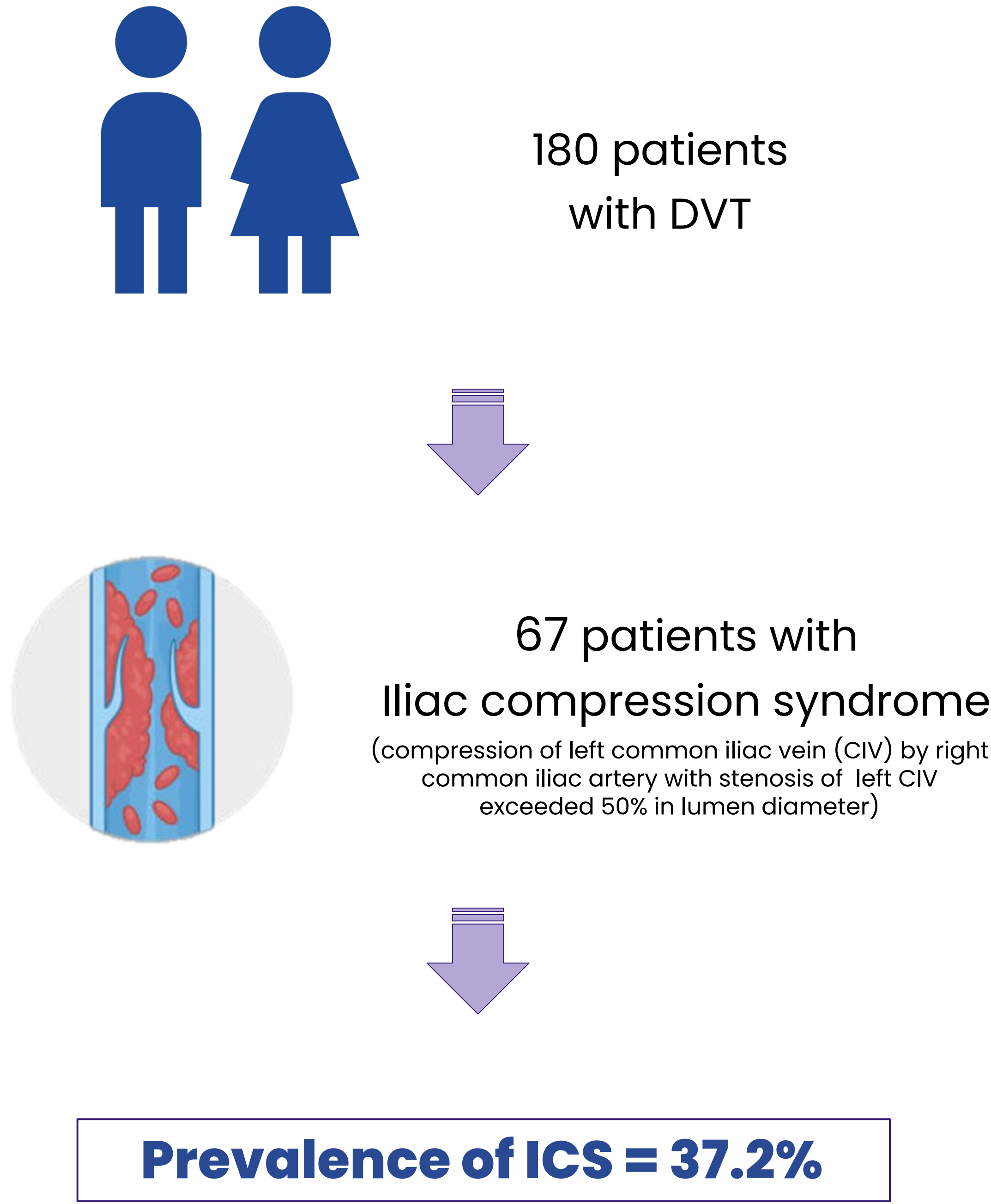


Table 2. Recurrent DVT, pulmonary embolism, and post-thrombotic syndrome in patients with Iliac compression syndrome

Outcomes, %	All patients, % (n=180)	Iliac compression syndrome, % (n=67)	Non-iliac compression syndrome, % (n=113)	Odds ratios (95% CI)	P-value
Recurrent DVT	17 (9.4)	12 (17.9)	5 (4.4)	4.71 (1.6–14.1)	0.003
Pulmonary embolism	32 (17.8)	9 (13.4)	23 (20.4)	0.61 (0.3–1.4)	0.243
Post-thrombotic syndrome	5 (2.8)	3 (4.5)	2 (1.8)	2.60 (0.4–16.0)	0.302

Abbreviations: DVT, deep vein thrombosis.

CONCLUSION

The prevalence of ICS in DVT patients in our study was high. ICS was more common in younger patients and was associated with an increased risk of recurrent DVT. ICS might be an under-investigated contributor to DVT and warrants further exploration.