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Chao-Ruei Lin

Department of Physical Medicine and Rehabilitation, Kaohsiung Medical University Hospital, Kaohsiung

Cyuan-Fong Li

*Department of Physical Medicine and Rehabilitation, Kaohsiung Medical University Hospital, Kaohsiung;
Department of Physical Medicine and Rehabilitation, Kaohsiung Municipal Siaogang Hospital, Kaohsiung*

Wen-Fang Tai

Specialist Nurse Office, Kaohsiung Medical University Hospital, Kaohsiung

Chia-Ling Lee

*Department of Physical Medicine and Rehabilitation, Kaohsiung Medical University Hospital, Kaohsiung;
Department of Physical Medicine and Rehabilitation, Kaohsiung Municipal Ta-Tung Hospital, Kaohsiung,
cathyleetw@gmail.com*

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Case Report

Superficial Venous Thrombosis with Concomitant Deep Venous Thrombosis of Upper Extremity, A Case Report

Chao-Ruei Lin¹, Cyuan-Fong Li^{1,2}, Wen-Fang Tai³, Chia-Ling Lee^{1,4}

¹Department of Physical Medicine and Rehabilitation, Kaohsiung Medical University Hospital, Kaohsiung;

²Department of Physical Medicine and Rehabilitation, Kaohsiung Municipal Siaogang Hospital, Kaohsiung;

³Specialist Nurse Office, Kaohsiung Medical University Hospital, Kaohsiung;

⁴Department of Physical Medicine and Rehabilitation, Kaohsiung Municipal Ta-Tung Hospital, Kaohsiung.

Background: Upper extremity deep venous thrombosis (UE-DVT) can occur in younger athletic patients with excessive motion of the upper extremities and anatomical variation[1-2] or relates to central venous catheter (CVC) cannulation and malignancy. However, the possible mechanism, the extension of thrombus from superficial venous thrombosis (SVT) is always forgotten. Herein, we report a case of UE-DVT with concomitant SVT.

Case Report: An 81-year-old female presented with a new fever combined with tenderness, redness, swelling in the medial aspect of her left forearm, SVT with phlebitis was confirmed by soft tissue ultrasound (US). However, swelling of the proximal upper arm was noticed at the same time and UE-DVT was confirmed by the Computed tomography angiography. No other possible etiology was found after general survey except the SVT.

Conclusion: UE-DVT can be a life-threatening disease if complicated with massive pulmonary embolism. Upper extremity superficial venous thrombosis (UE-SVT) as one of the possible mechanism of deep venous thrombosis (DVT) can be seen in daily clinical practice and may be related to peripheral venous catheter use. Although it seems the chance of concomitant UE-DVT is small, keeping this diagnosis in mind could help avoid the chance of misdiagnosis. In addition, the soft tissue US can be a suitable tool to follow up the thrombus status and the treatment efficacy. (*Rehabil Pract Sci* 2023; 2023(1): 35 - 37)

Key Words: superficial venous thrombosis, deep venous thrombosis, soft tissue ultrasound

INTRODUCTION

Deep venous thrombosis (DVT) can be a life-threatening disease, if complicated with massive

pulmonary embolism. Most of the DVT occurs in lower extremities, with the upper extremity deep venous thrombosis only accounting for 5% to 10% of all DVT cases.^[1-3] Acute upper extremity deep venous thrombosis (UE-DVT) can present with arm pain, unilateral arm swelling, or

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Correspondence to: Dr. Chia-Ling Lee, Department of Physical Medicine and Rehabilitation, Kaohsiung Medical University Hospital, No. 100, TzYou 1st Road, Kaohsiung 807, Taiwan.

Tel : +886975357580 E-mail : cathyleetw@gmail.com

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low-grade fever.^[4]

CASE REPORT

An 81-year-old female received inpatient rehabilitation for limbs weakness after burr hole drainage for one subdural hematoma in the right fronto-temporo-parietal region. During hospitalization, she could move her limbs freely and ambulate with assistance; however, a new fever developed with tenderness, redness, swelling in the medial aspect of her left forearm and swelling of the upper arm. The laboratory test revealed elevated C-Reactive protein (63.49 mg/L) and D-dimer (2.31 mg/L FEU). Soft tissue ultrasound (US) revealed thrombus formation over cephalic vein (Figure 1.A and B). Computed tomography angiography revealed thrombus formation over the left axillary vein, cephalic vein, radial and ulnar vein (Figure

1.C, D and E). For acute thrombophlebitis with cellulitis and UE-DVT, Amoxicillin plus clavulanic acid and Enoxaparin was prescribed. We kept bedside rehabilitation program including gentle range of motion exercise, left upper limb elevation and ice packing. After the left upper limb's circumference was stable under Enoxaparin, we started muscle strengthening exercise and functional training. The follow-up exam with soft tissue US showed partial resolution of thrombus (Figure 1.F, G, H and I). The circumference of the left upper arm and forearm decreased from 29 cm to 26 cm and from 26 cm to 24 cm respectively. The laboratory test for thrombophilia evaluation revealed no specific findings for any of C3, C4, antinuclear antibody, anti-Thrombin III, protein-C, protein-S, or anti-CTD (connective tissue diseases) antibody.

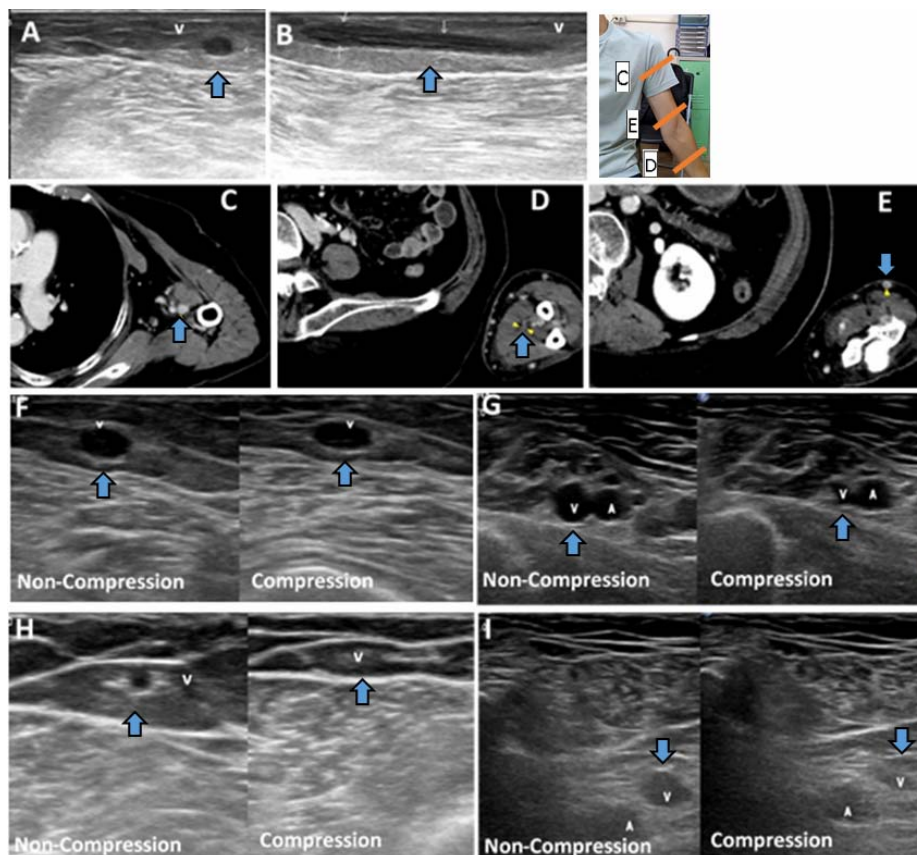


Figure 1. Soft tissue ultrasonography (US) on Day 1 showed thrombus in the left cephalic vein at transverse view (A). and longitudinal view (B). Computed tomography angiography of the left forearm on Day1 showed thrombosis in left axillary vein (C). ulnar vein (D). and cephalic vein (E). Soft tissue US on Day 10 showed poor compressibility in left cephalic vein (F). partial compressibility in left axillary vein (G). with good compressibility in right cephalic vein (H). and left subclavian vein (I).

DISCUSSION

UE-DVT is usually divided into primary and secondary UE-DVT, with primary UE-DVT mainly occurring in younger athletic patients with excessive motion of the upper extremities and anatomical variation^[1-3], while secondary UE-DVT mainly relates to central venous catheter (CVC) cannulation and malignancy.^[1-3] However, superficial venous thrombosis (SVT) can also be a risk factor for DVT in the upper extremities. The possible mechanism is the extension of thrombus from SVT at the junction between superficial and deep venous systems.^[5] The link between SVT and DVT is much clearer in lower extremities.^[5] Although few studies have discussed the relationship between upper extremity superficial venous thrombosis (UE-SVT) and UE-DVT, the same link can also exist in the upper extremities. In this case, without obvious risk factors including thrombophilia, CVC cannulation and malignancy history, it was possible that the extension of UE-SVT led to UE-DVT.

There are few studies discussed about the proper rehabilitation program for patients with DVT. Only some meta-analyses and review articles have shown that early ambulation is not associated with a higher incidence of new pulmonary embolization (PE), progression of DVT, and DVT related deaths.^[6-8] Some benefit is also noted including decreased pain and swelling and fewer post-thrombotic syndrome symptoms. Further study is still needed to provide guide for clinical practice.^[6-8]

UE-SVT related to peripheral venous catheter use can be seen in daily clinical practice and is usually self-limiting after removal of the catheter, although it can present with concomitant UE-DVT in theory. Without noticing the associated symptoms and signs like proximal upper arm swelling in this case, the diagnosis of DVT could have been missed. Although it seems the chance of concomitant UE-DVT is small, keeping this diagnosis in mind could help avoid the chance of misdiagnosis.

CONCLUSION

UE-DVT can be a life-threatening disease if complicated with massive pulmonary embolism. Noticing the

UE-SVT at soft tissue US and associated symptoms and signs can help us to early detect UE-DVT. In addition, the soft tissue US can be a suitable tool to follow up the thrombus status and the treatment efficacy.

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CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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