A CASE WİTH PAGET-SCHROTTER SYNDROME: A Rare Primary Upper Vein Thrombosis

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Summary

Thrombosis of deep veins of the upper extremity (UEDVT) is quite rare, accounting for only 1-2% of deep vein thrombosis in the body. Primary UEDVT is a rare disorder that refers either to effort thrombosis or idiopathic UEDVT. Paget-Schrotter syndrome, effort thrombosis, was initially described in 1875 in the patients with spontaneous UEDVT, usually in their dominant arm, after a strenous activity. The heavy exertion causes microtrauma to the vessel intima and leads to activation of the coagulation cascade. Anticoagulation, the cornerstone of the therapy, helps to maintain patency of venous collaterals and reduces thrombus propagation. In this paper, we present a patient with well-developed collaterals, and could be treated with warfarin successfully. Paget-Schrotter syndrome should be considered in the differential diagnosis in a young patient admitted with pain and swelling of dominant upper extremity. Although the patient, presented in this paper, was treated with anticoagulation successfully, to prevent the complications such as post-thrombotic syndrome that may affect the health quality of these young patients, more aggressive treatments, such as thrombolysis, should be considered. ***(Arch Turk Soc Cardiol 2003;31:789-92)***

Key words: *Deep vein thrombosis, effort thrombosis, Paget-Schrotter syndrome*

Özet

Paget-Schrotter Sendromlu Bir Olgu: Nadir Bir Üst Ekstremite Ven Trombozu

Üst ekstremite derin ven trombozu (ÜEDVT) oldukça nadirdir ve vücuttaki derin ven trombozlarının yalnızca %1-2'sini oluşturur. Primer ÜEDVT nadir bir durumdur ve efor trombozu veya idiyopatik olarak gruplandırılır. Paget-Schrotter sendromu, efor trombozu, 1875 yılında ağır bir egzersiz sonrası genellikle baskın olan kolda kendiliğinden ÜEDVT gelişen hastalarda tanımlanmıştır. Ağır egzersiz damar intimasında mikrotravmaya neden olmakta ve koagülasyon kaskadının aktivasyonuna yol açmaktadır. Tedavinin temel taşı olan antikoagülasyon venöz kollaterallerin açıklığının sağlanmasına yardımcı olur ve trombüsün ilerlemesini azaltır. Bu yazıda iyi gelişmiş kollateralleri olan ve warfarin ile başarılı olarak tedavi edilmiş bir olgu sunulmuştur. Kullandığı kolunda ağrı ve şişme ile başvuran genç bir hastada Paget-Schrotter sendromu ayırıcı tanıda düşünülmelidir. Sunulan olguda oral antikoagülan uygulanmış olsa da, bu genç hastalarda post-trombotik sendrom gibi hayat kalitesini etkileyebilecek komplikasyonların gelişimini önlemek amacıyla trombolitik tedavi gibi daha yoğun tedavi şekilleri önerilmektedir. ***(Türk Kardiyol Dern Arş 2003;31:789-92)***

Anahtar kelimeler: *Derin ven trombozu, efor trombozu, Paget-Schrotter sendromu*

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Thrombosis of the deep veins of the upper extremity is quite rare, accounting for only 1- 2 % of deep venous thrombosis in the body[1]. The lower incidence of deep vein thrombosis in the upper extremity may be explained by lower gravitational stress, fewer valves as potential foci for thrombus formation, higher levels of plasminogen activator and fibrinolytic activity [2]. But upper- extremity deep vein thrombosis (UEDVT) is an increasingly important entity with potential for considerable morbidity. UEDVT has become more common over the past several decades due to increased use of central venous catheters. Sakakibara et al. reported 12 cases with upper extremity deep venous thrombosis and as etiologic factors, five of the patients had neoplastic disease, one had hemodialysis, and two had transvenous pacemaker implantations[3]. UEDVT most commonly refers to thrombosis of the axillary and/or subclavian veins and classified as primary or secondary on the basis of the pathogenesis. Primary UEDVT is a rare disorder (2 per 100 000 persons per year) that refers either to effort thrombosis or idiopathic UEDVT[4].

REPORT OF CASE

A left handed 44- year- old, otherwise healthy, female patient was admitted with one month history of pain and swelling of her left upper extremity. There was a history of strenuous activity (washing clothes) 2 weeks ago but there were no history of, coagulopathy or family history of bleeding history, trauma (such as vein puncture or manicure), oral and genital ulcerations. On physical activity, the left upper extremity was firmly edematous, slightly mottled. There was a palpable cord present from the midbiceps into axilla. Distal neurovascular and motor functions were normal. The chest X-ray, transthoracic echocardiographic examination were also normal. Immunoglobulins, complete blood count including platelets, routine biochemistry, thyroid function tests, prothrombin and partial thromboplastin time, antithrombin III, factor V and VII levels, tumour markers (CA- 125, 19.9 ,15-3,ß-hCG) were in normal limits. Anti- nuclear antibodies, Anti- DNA and anti- phospholipid antibodies were negative. Colour flow Doppler ultrasound revealed the thrombus extending from the left subclavian vein to the distal part of brachial vein. Contrast venography confirmed a thrombosed brachial to axillary vein and demonstrated well developed venous collaterals . The abdominal, pelvic and mammarian ultrasonography, computerized tomography of thorax were performed to rule out an underlying malignancy and all were normal. A genetic analysis was also performed, factor V Leiden and prothrombin 20210A mutations were also negative. The patient was diagnosed as primary UEDVT, Paget-Schrotter syndrome, and after intravenous heparin, warfarin was begun and the international normalized ratio (INR) was monitored for a goal range of between 2.5 and 3.5. Together with elevation and local heat, the pain and sweelling improved by eigth day and the patient was discharged on warfarin treatment. There were no symptoms or complaints at the follow-up visit, two weeks later.

DISCUSSION

Paget-Schrotter syndrome, effort thrombosis, was initially described in 1875 by S. James Paget and in 1884 by L. Von Schrotter[4,5]. Patients with Paget-Schrotter syndrome develope spontaneous UEDVT, usually in their dominant arm, after strenuous activity. Zell et al. reported 7 patients with Paget-Schrotter syndrome who had temporal and causal relationship between partially unusual sports activities and the genesis of the thrombosis [5]. The heavy exertion causes microtrauma to the vessel intima and leads to activation of the coagulation cascade. Significant thrombosis may occur especially if mechanical compression of the vessel is also present. The numerious theories postulated to explain the site of venous obstruction of the subclavian/axillary vein by humeral head, pectoralis major, costocoracoid ligament, first rib, clavicle, preveneous phrenic nerve.

In contrast to the patients with Paget-Schrotter syndrome, patients with idiopathic UEDVT have no trigger or obvious underlying disease. But this

may be associated with occult cancer. In one study, one fourth of the patients presenting with primary UEDVT were diagnosed with cancer (most commonly lung and lymphomas) within 1 year but mostly in the first week of hospital admission for the venous thrombosis[6].

The relative prevalence of inherited thrombophilic disorders in UEDVT compared with lower extremity deep venous thrombosis is not clear. But Martinelli et al reported a significantly lower prevalence of thrombophilic disorders in UEDVT than in lower extremity venous thrombosis (10.8 vs 43.2 %, respectively)[7]. Activated protein C resistance was the most common inherited coagulation abnormality observed, followed by the presence of anticardiolipin antibodies[5,8]. But protein C, S and antithrombin deficiencies[9], hyperhomocysteinemia[10], and prothrombin gene mutations[11] have also been reported. Contrast venography remains the reference standard for the diagnosis of UEDVT, but invasiveness and contrast agent reactions limits its use to situations in which the clinical suspicion is high but noninvasive test are inconclusive. Available noninvasive tests are real- time B-mode, duplex, color Doppler ultrasonography, magnetic resonance angiography and radionuclide venography.

Anticoagulation, the cornerstone of the therapy, helps to maintain patency of venous collaterals and reduces thrombus propagation and warfarin is continued for a minimum of 3 months. But since the patients with primary UEDVT are typically young, active and otherwise healthy individuals, more aggressive treatment such as catheter- directed thrombolysis, are recommended. Many case series of thrombolysis have been reported excellent outcomes with only minor bleeding complications[12,13]. Percutaneous mechanical thrombectomy used in combination with thrombolytics, can rapidly extract large quantities of thrombus, thereby reduce the dose and duration of thrombolytic therapy[14]. The most commonly recommended therapy for Paget-Schrotter syndrome is multimodal approach developed by Machleder[13], involving transcateter thrombolytic therapy, 3 months anticoagulation and transaxillary rib resection and decompression. Patients who have contraindications to anticoagulation or who develope pulmonary emboli (PE) despite adequate therapy are candidate for superior vena caval (SVC) filters, although the benefits outweighing risks has not been proved yet. Preliminary studies suggest that ultrasound may accelerate thrombolysis by enhancing enzymatic fibrinolysis and mechanically disrupting the thrombus[15]. Percutaneous angioplasty is commonly used for the treatment of UEDVT and vein stenosis in patients with arterio-venous shunts and in these cases, stent implantation is usually performed to improve the outcome in long term [16]. But, stent fracture is an important problem in the patients with Paget-Schrotter syndrome if the stent is implanted without resection of first rib [17]. Up to one third of the patients with UEDVT have PE[9] but PE secondary to UEDVT may be rarely recurrent or fatal despite adequate anticoagulation. Other complications of UEDVT are post- thrombotic syndrome, SVC syndrome, septic thrombophlebitis, thoracic duct obstruction and brachial plexopathy.

UEDVT is an underrecognized disorder with comparable mortality and morbidity rates with lower extremity venous thrombosis. The patients with primary UEDVT are generally young, active and otherwise healthy individuals and they need more aggressive treatment to prevent long term complications such as post- thrombotic syndrome. But the patients who admitted several weeks later and with well- developed collaterals, as our case, can be treated with warfarin successfully.

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DÜZELTME: Türk Kardiyoloji Derneği Arşivi Eylül 2003 sayısında yayınlanan "The Comparison of Mid-Term Angiographic Results in Diabetic and Non-Diabetic Patients After Cononary Artery Bypass Grafting" adlı makalenin 501. sayfasında geçen "Table 4" basım hatası sonucu yazı içinde basılamamıştır. Tablo 4 aşağıdaki gibidir. Düzeltir, özür dileriz

Table 4: *Newly developed lesions and reinterventions*

	DM		NON-DM	
	New lesion	Reintervention	New lesion	Reintervention
LAD	5	3	14	10
Dia	2	1	5	3
Intermediate	1	0	4	3
Cx branch	13	10	24	21
RCA	15	10	25	20
RPD	1	1	7	5
SVG		4a		14a
LIMA anast.		1b		2b
SVG anast.		3c		7c

LAD= Left anterior descending coronary artery, Dia= Diagonal coronary artery; Cx= Circumflex coronary artery;RCA= Right coronary artery; RPD= Right posterior descending coronary artery, SVG= Sapheneous vein graft; a= 1 reintervention for recurrent saphenous vein graft stenosis; b= reintervention for LIMA-LAD anastomotic stenosis; c= reintervention for SVG anastomotic stenosis; Unless otherwise indicated, all reinterventions were PTCA.