Petechiae and Ecchymoses on the Arm

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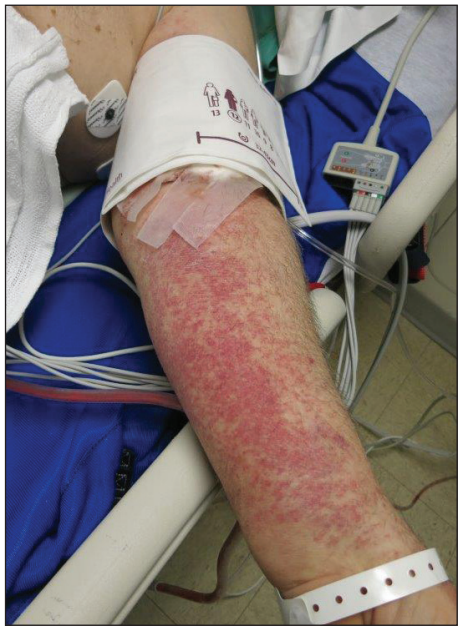

A 70-year-old man who had been admitted to the hospital a week prior for a right groin abscess overlying the site of a femoral graft developed a purpuric rash isolated to the left arm of 1 day's duration. The dermatology service was consulted by vascular surgery. The patient denied prior episodes of a similar rash, and there was no associated pruritus or pain. There was no history of trauma to the area. His medical history was remarkable for type 2 diabetes mellitus, hypertension, and peripheral vascular disease. His surgical history was notable for bilateral popliteal aneurysm repair and right femoral aneurysm repair. No pertinent family history was elicited. Cefepime, metronidazole, and vancomycin were administered for the groin abscess. Additional medications included amlodipine, atorvastatin, diltiazem, gabapentin, heparin, insulin, oxycodone, and acetaminophen.

Physical examination revealed broad ecchymoses on the left forearm with scattered petechiae as well as linear ecchymoses on the left upper arm distributed in the area where a sphygmomanometer cuff was applied. Full-body skin examination confirmed that the distribution of the petechiae and ecchymoses was limited to the left arm. The patient was normotensive at the time of examination. Laboratory evaluation revealed a hemoglobin level of 10.9 g/dL (reference range, 14.0–17.5 g/dL), a platelet count of 279,000/μL (reference range, 150,000–350,000/μL), and a glucose level of 121 mg/dL (reference range, 70–110 mg/dL).

WHAT'S YOUR **DIAGNOSIS?**

a. actinic purpura
b. deep venous thrombosis
c. disseminated intravascular coagulation
d. Rumpel-Leede phenomenon
e. small vessel vasculitis

PLEASE TURN TO PAGE E3 FOR THE DIAGNOSIS

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THE **DIAGNOSIS:** Rumpel-Leede Phenomenon

Rumpel-Leede (R-L) phenomenon describes the rare benign occurrence of dermal capillaries acutely rupturing following the administration of a tourniquetlike force on an extremity,[1] which manifests as asymptomatic petechiae and ecchymoses on a distal extremity, usually following noninvasive measurement of blood pressure.[2] Rumpel-Leede phenomenon represents an underrecognized entity that either is excluded or minimally referenced in most dermatology textbooks. The R-L sign initially was described in the early 1900s after it was observed that tourniquets applied to the arms of patients with scarlet fever would lead to the development of petechiae in that extremity.[3] It later was elucidated that underlying vascular disease predisposes to dermal capillary fragility, a risk factor for R-L phenomenon to occur upon application of a tourniquet. Rumpel-Leede phenomenon has been noted in patients with diabetes mellitus, acute or chronic hypertension, and thrombocytopenia.[4] In addition to being hypertensive and diabetic, our patient had been taking amlodipine and diltiazem. Calcium channel blockers have been linked to R-L phenomenon in case reports as well as in a study of calcium channel blockers inducing capillary fragility in vivo.[5] Rumpel-Leede phenomenon also has been noted in patients with tightly fitting garments and infants carried in baby carriers.[1]

The differential diagnosis for R-L phenomenon includes actinic purpura, small vessel vasculitis, disseminated intravascular coagulation (DIC), and deep vein thrombosis (DVT). Actinic purpura, also called solar purpura or senile purpura, represents the petechiae and ecchymoses that are associated with aging skin. It is thought to occur when DNA damage, UV-induced solar elastosis, and decreased lipids in the stratum corneum cause a weakened ability to contain red blood cell extravasation from capillaries.[6] Due to the lack of history of trauma and clear association with the blood pressure cuff placement in our patient, a diagnosis of actinic purpura was unlikely. In small vessel vasculitis, patients classically present with nonblanching palpable purpura frequently distributed over the lower extremities. The isolation of the lesions to only the left arm lowered the suspicion for vasculitis. Cutaneous manifestations of DIC and other hypercoagulable states may include purpura, livedo reticularis, atrophie blanche, and in extreme cases purpura fulminans. Routine laboratory examination reveals thrombocytopenia, prolonged prothrombin time/partial thromboplastin time, and hemolytic anemia.[7] Although our patient had the risk factors of recent infection and surgery, a hemoglobin level of 10.9 g/dL (reference range, 14.0–17.5 g/dL) and platelet count of 279,000/μL (reference range, 150,000–350,000/μL) excluded DIC as the probable diagnosis. Our patient was at an overall increased risk for DVT due to his prolonged hospital stay, increased age, and other factors. Despite these risk factors, the lack of pain or swelling made this diagnosis unlikely. Furthermore, our patient was heparinized throughout his hospital stay, and upper extremity DVT accounts for only 4% to 10% of the total DVT incidence.[5]

Although R-L phenomenon is a benign, self-limited condition, it may be necessary in some cases to rule out more serious underlying etiologies with investigative workup comprised of a complete blood cell count, coagulation profile, and basic metabolic panel. However, recognition of the R-L phenomenon in the right clinical context of localized petechiae or ecchymoses with a history of a tourniquetlike force may prevent an unnecessary and costly workup. Patients should be encouraged that R-L phenomenon will resolve over time with identification and correction of the tourniquetlike force. In this case, we recommended loosening of the sphygmomanometer cuff and alternating extremities to which the cuff was to be placed, which resulted in complete clearance of the petechiae and ecchymoses within 5 days.

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