Rumpel-Leede phenomenon presenting as a hypertensive urgency

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Rumpel-Leede (R-L) phenomenon is the rare event in which the small dermal capillaries of an extremity rupture in response to application of a compressive device to that extremity, such as when inflating a cuff during noninvasive blood pressure monitoring or when applying a tourniquet to draw blood. This capillary rupture results in formation of a petechial rash distal to the compressive device. R-L phenomenon is believed to occur most often in patients with underlying vascular disease, such as diabetes mellitus or thrombocytopenia. R-L phenomenon is most often benign, though it may rarely be associated with pain and discomfort. There is no treatment for this condition apart from treatment of the underlying vascular disease or thrombocytopenia. We report a 57-year-old woman who presented with hypertensive urgency and experienced R-L phenomenon during blood pressure cuff inflation.

The Rumpel-Leede (R-L) phenomenon was described in 1909 by Dr. Theodor Rumpel and again in 1911 by Dr. Carl Stockbridge Leede while treating patients with scarlet fever (1), where R-L phenomenon occurred following application of a tourniquet. Currently, most cases of R-L phenomenon are reported in elderly patients with a history of diabetes and hypertension, or in patients with thrombocytopenia. We present a case of R-L phenomenon in a nondiabetic patient with a history of uncontrolled hypertension.

CASE PRESENTATION

A 57-year-old nondiabetic woman with a 10-year history of systemic hypertension and medication nonadherence presented with severe right-sided facial pain radiating to the occiput and neck and associated numbness and tingling affecting the right side of her face, right arm, and right leg. Noninvasive blood pressure (BP) monitoring revealed a BP of 272/124 mm Hg. While the patient's BP was being recorded, she began to complain of sharp pain in her left upper arm, where the BP cuff had been placed. She subsequently developed an erythematous petechial rash spreading distally from her left elbow down to her fingers, and when the cuff was removed, striae were observed along the full circumference of her upper arm (*Figure 1*). After the cuff was removed, the patient's arm pain rapidly resolved, but the petechial rash and striae persisted. The patient reported that this phenomenon had occurred several times in the

past during BP monitoring, with the initial episode occurring 10 years earlier, when hypertension was first diagnosed.

The patient's workup included a normal white blood cell count ($9.78 \times 10^9/\text{L}$) and platelet count ($317 \times 10^9/\text{L}$). Her serum chemistries, electrocardiogram, echocardiogram, head computed tomography (CT), magnetic resonance imaging, and magnetic resonance angiography were also normal. A CT of the patient's face revealed a right periodontal abscess with mandibular cellulitis. The cellulitis was successfully treated with antibiotics, and the petechial rash had resolved by the time the patient returned to the clinic 1 month after discharge from the hospital.

DISCUSSION

The formation of petechiae distal to the BP cuff during BP monitoring is quite common, particularly in diabetic patients (2). These petechiae may be mild and often go undetected. R-L phenomenon is a more severe form of petechial hemorrhage, resulting in an apparent erythematous rash, which is much less common and is seen almost exclusively in patients with thrombocytopenia or an underlying vascular disease, most often diabetes. The present case is remarkable for the absence of either of these findings. Only 2 other cases of R-L phenomenon have been reported in patients without thrombocytopenia or vascular disease: the first was a 72-year-old woman, where the presence of R-L phenomenon was attributed to age-related capillary fragility (3); the second case was believed to have resulted from the use of a BP cuff that was too small for the patient's arm (1). In the present case, R-L phenomenon was likely related to the patient's state of hypertensive urgency, with a BP of 272/124 mm Hg. We believe that the BP cuff inflation in the presence of significant venous pressure resulted in the rupture of dermal capillaries, even in the absence of underlying capillary fragility.

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Figure 1. Views of the patient's left arm and hand, showing (a) striae along the upper arm (black arrow), followed by transition to an erythematous petechial rash distal to the elbow; (b) the demarcation between the rash and the patient's normal skin tone (red arrow); and (c) the most prominent part of the rash over the dorsal surface of the patient's wrist and hand.

Another unique finding in this case is that our patient complained of pain in her arm during BP monitoring, an uncommon finding in R-L phenomenon. Most reported cases of R-L phenomenon resolved within 2 weeks. While our patient's most recent episode resolved within 1 month, she did report that previous episodes persisted for up to 3 months.

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3. Rehman HU, Kambo J. Rumpel-Leede phenomenon: a case report. *Can J Gen Intern Med* 2014;9(4):159.