local hypothermia, topical 99% dimethyl sulfoxide, oral corticosteroids, celecoxib, and pyridoxine.\(^1\) Though the eruption is self-limited, it can delay chemotherapy and if severe, may require dose reduction or changing chemotherapeutic regimens. Over half of patients have a recurrent eruption with restitution of the offending agent, and there is no way to prevent TEC.\(^5\)

It has been proposed that treatments for hyperhidrosis such as topical aluminum chloride, iontophoresis, or botulinum toxin injection, could be used for prevention of TEC.\(^6\) The absence of cutaneous reaction in an area of hypohidrosis in this patient suggests that these interventions may be effective as TEC prophylaxis. If successful, the ability to prevent TEC by decreasing sweat production would have a significant benefit for patients who would otherwise have to reduce chemotherapy dose or switch regimens.

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Rumpel-Leede Phenomenon Associated With Tourniquet-like Forces of Baby Carriers in Otherwise Healthy Infants: Baby Carrier Purpura

Acute-onset, localized petechiae and purpura of the lower extremities occurred in 3 otherwise healthy infants following recent exposure to baby carriers. This case series identifies tourniquet-like forces associated with baby carriers as a mechanical cause of the Rumpel-Leede phenomenon.

Report of Cases | The index patient’s father—a pediatric dermatologist—had taken his infant son on a 2-hour hike using a “legs out,” forward-facing baby carrier. At the hike’s conclusion, the cloth material of the baby carrier was noted to have cinched tight around the infant’s lower extremities. Almost immediately after release of tension on the cloth material, a showering of petechiae and purpura was observed on the infant’s legs,
Discussion | Acute-onset petechiae and purpura can be alarming, accounting for approximately 2.6% of all pediatric emergency department visits. Given the life-threatening conditions associated with these lesions, extensive evaluations are often implemented. A more benign cause may be the Rumpel-Leede phenomenon, a self-limited clinical finding characterized by acute dermal capillary rupture caused by tourniquet-like forces leading to distal petechiae and purpura on release of pressure. A 2012 retrospective review of 36 well-appearing infants presented with petechiae and purpura limited solely to the lower extremities in the setting of recent exposure to baby carriers, one with mildly elevated levels of aspartate transaminase (AST) (65 U/L), alanine transaminase (ALT) (55 U/L), platelets (504 × 10³/µL), and creatine kinase (CK) (177 U/L) and the other with a mildly elevated AST value (59 U/L). (To convert ALT, AST, and CK to microkatal per liter, multiply by 0.0167.) Multiple laboratory investigations in consultation with a hematology service failed to reveal an underlying bleeding diathesis (tests included complete blood cell count, comprehensive metabolic panel, fibrinogen measure, activated partial thromboplastin time, prothrombin time, blood cultures, and skeletal survey). Lesions completely resolved within several weeks, and all 3 children remained well through follow-up.

Initially reported in association with scarlet fever, the Rumpel-Leede phenomenon has been associated with conditions predisposing patients to capillary fragility, such as diabetic microangiopathy and thrombocytopenia, after ambulatory blood pressure monitoring. Medications such as calcium channel blockers have also been implicated. In children, the finding has been associated with leukemia, liver disease, and infantile scurvy.

Excessively tight baby carriers may induce a Rumpel-Leede phenomenon in susceptible infants. Certain viral infections causing thrombocytopenia, including Epstein-Barr virus, may help lower the threshold for occurrence; notably, 2 patients in this series had mild transaminitis, suggesting a predisposing viral cause. Alternatively, the slightly elevated CK and AST levels may be secondary to trauma to myocytes from sustained mechanical pressure.

Acute onset of petechiae and purpura requires careful investigation to exclude serious underlying causes. At a minimum, direct observation and screening laboratory tests (eg, complete blood cell count, comprehensive metabolic panel, coagulation profile) may be warranted. In the specific setting of a supporting history and physical examination with well-demarcated localized findings, however, recognition of the Rumpel-Leede phenomenon presenting as “baby carrier purpura” may help spare infants from unnecessary, costly, and invasive evaluations and treatments.

Given the ubiquity of baby carriers in today’s society, it is unclear why more cases of this phenomenon have yet to be documented. Similar presentations may simply be unrecognized, and factors such as duration of exposure, carrier type, infant positioning, and local terrain may play roles. Consequently, the true incidence and overall long-term clinical significance of baby carrier purpura should be investigated. Larger, prospective studies would also help elucidate the utility of “muscle markers” (eg, AST and CK) as potential screening tools when tourniquet-like forces are considered as a possible causal agent for this specific presentation.

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Cryotherapy—As Ancient as the Pharaohs

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In cryotherapy, also known as cryosurgery, cold temperatures are used to treat a wide variety of skin disease in modern dermatology. However, cryotherapy has its humble roots as far back as the Egyptians in 3000 BCE, when cold compresses were used to treat the inflammation of infected wounds.¹ In the fifth century BCE, Hannibal’s Carthaginian mercenaries experienced the hemostatic and destructive tissue effects of the cold while crossing the Alps en route to Rome.² In the Napoleonic times, cooling was used for anesthesia and amputation. It was not until the mid-1800s when modern use of cryotherapy was born. James Arnott, deemed the “father of modern cryosurgery,” was the first to use salted solutions with crushed ice to freeze cancers of the breast and cervix. The temperatures reached −18°C to −24°C, which was enough to freeze the tumors and lead to a reduction in size of the lesions and improved pain management. Eventually, Arnott used his cryosurgical device on acne and neuralgia.³ However, the device did not get cold enough for complete tissue destruction.

It was not until after the industrial revolution when temperatures of −190°C could be reached to produce and harness liquid air, marking the beginning of the dermatologic cryosurgery era. New York physician Campbell White successfully used this to treat a myriad of skin diseases, from nevi, warts, varicose leg ulcers, and chancroids to herpes zoster and epitheliomas.³ While this approach was still unachievable at most institutions, solid carbon dioxide became the mainstay of treatment because the temperatures required were half that of liquid air.

However, the method was limited to treating superficial skin conditions less than 1 to 2 mm deep. The post-World War II era further expanded the field by making liquid nitrogen readily available.² To fix the problem of inadequate penetration of tissue freezing with available techniques, solid copper discs cooled by submersion in liquid nitrogen became widespread practice. In the mid-20th century, the dermatologists and innovators Douglas Torre and Setrag Zacarian created the first handheld cryosurgery device and brought the first commercial device to market.³ These pioneers, along with a handful of others, established the field of dermatologic cryosurgery as it is known today.

From the early observations of the Egyptians and Greeks to the practice of cryotherapy using the handheld devices today, the field of cryosurgery has come a long way. The techniques are sound and have been effective in treating a wide array of benign, premalignant, and cancerous lesions. Thus, the ancient technique of cryotherapy will continue to play a role in the modern field of dermatology for years to come.

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