Symmetrical Peripheral Gangrene resulting from application of henna: a rare clinical occurrence

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Abstract
Symmetrical Peripheral Gangrene (SPG) is a rare clinical syndrome characterized by bilateral symmetric distal limb ischemia leading to gangrene with no evidence of major vascular occlusive disease. The peripheral pulses are usually palpable as a result of the sparing of larger vessels. The mechanism of vascular occlusion is poorly understood. Disseminated intravascular coagulation has been implicated as the final common pathway in its pathogenesis. Initial management is resuscitation followed by amputation when the gangrene becomes demarcated. We report a rare case of symmetrical peripheral gangrene of both hands and feet in a 28-year-old female who presented with pain and darkening of all her fingers and toes for 2 days following the application of henna, with no medical history of the known predisposing conditions. She had amputation of the digits of her hands and tarsometatarsal amputation of her feet bilaterally. She had an uneventful post-operative period and was discharged to see the outpatient department. While reported cases of SPG due to numerous etiologies can be found in the literature, this is to our findings the first time we are seeing it. The intriguing case presented here was brought about by the application of henna used as a cosmetic agent and was characterized by a very rapid clinical course with no other apparent predisposing etiology.

Case Report
A 28-year-old female patient presented to the Accident and Emergency Unit of the Aminu Kano Teaching Hospital, Kano, Nigeria, with a 2-day history of pain and darkening of all her fingers and toes. A week prior to presentation, she had developed constant rest pain in her hands and feet following the application of a locally prepared henna mixture on all her digits by way of an occlusive dressing. Her fingers and toes became dusky in appearance, with associated blistering of the fingers. She had no history of intermittent claudication. She did not drink alcohol or smoke, and she had no known chronic illnesses. There was no family history of diabetes mellitus, hypertension, heart disease, dyslipidemias, and connective tissue disorders. Her past medical history was not significant. She was negative for Human Immunodeficiency Virus (HIV) and was not on any routine medications. She had a pulse rate of 90 beats per minute, with a blood pressure of systolic 120 mm Hg and diastolic of 70 mm Hg. Examination of the hands showed no gangrenous parts of her hands and feet was obtained. She had amputation of the digits of her hands and tarsometatarsal amputation of her feet bilaterally (Figures 2 and 3).

Discussion
SPG is a rare clinical condition associated with symmetrical ischemia and gangrene of the distal extremities. Our patient developed bilateral symmetrical gangrene of all digits. The condition is associated with a wide spectrum of infective and non-infective etiological causes. Non-infective causes include, but are not limited to, malignancy, renal failure, diabetes mellitus, patient financial constraints.

Concluding remark
Henna is a common cosmetic preparation used for hair coloring and body art. The use of henna may result in gangrene due to occlusion of the small vessels. This condition is rare, and its diagnosis and management require prompt attention to prevent amputation.
immunosuppression, hypovolemic shock, myeloproliferative disorders, vasospastic conditions, hyperviscosity syndromes, connective tissue disorders like Systemic Lupus Erythematosus (SLE) and antiphospholipid antibody syndrome among other causes.7,8 Drugs like noradrenaline, adrenaline, and dopamine have also been documented as causative agents in some patients.3 The exact pathogenesis of the condition is not well understood. However, the underlying mechanism includes a low-flow state with DIC. A mortality rate of 35% has been reported in association with DIC.9 Despite the wide array of etiological causes for SPG, it is not uncommon to fail to identify an underlying cause. While SPG is well documented in the literature, to our knowledge application of henna for cosmetic purposes has not been previously reported as a cause. The phenomenon in this case was not precipitated by a known trigger of SPG, which in this case is the application of a mixture of henna, petrol, hydrogen peroxide, lemon, and urea fertilizer — all of which are not individually known to be a causative agent of SPG. It is often difficult to isolate the cause of vascular occlusion in SPG. In the early stages, pulses may still be palpable, and the large vessels are often spared. As distal extremities are especially susceptible, these changes begin distally and may progress proximally to involve the entire limb.

Currently, no treatment has been found to be completely effective. However, early recognition remains the key factor in management.10 If peripheral perfusion appears to be uncertain, aggressive fluid resuscitation is recommended with the aim to discontinue or reduce the precipitating etiology at the earliest possible chance. Treatment of sepsis and DIC with IV antibiotics and low-dose heparin, respectively, where feasible, should be instituted promptly.11 Other modalities tried with variable degrees of success includes sympathectomy, IV vasodilators, local injection or IV infusion of alpha-blockers, and IV prostaglandins, especially after the appearance of digital ischemia.10,11

The amputation of the gangrenous tissue(s) may become inevitable, but an initial nonsurgical approach allows time for the patient’s condition to be stable and for the gangrene to become well-demarcated.5

We conclude that the combination of all substances in the mixture may have contributed since none of the substances individually have been implicated from the literature to be a predisposing cause without other added predisposing pathology. Even though endarteritis resulting from vascular spasm may not be entirely ruled out.

Awareness, early recognition, and prompt management, including adequate fluid resuscitation and removal of the etiological agent, are necessary to avoid catastrophic outcomes such as multiple limb gangrene.

References
7. Ghosh Sk, Bandyopadhyay D. Symmetrical peripheral gangrene. Indian J Dermatol Venereol Leprol 2011;77:244-8.