

Symmetrical Peripheral Gangrene Resulting from the Application of Henna: A Rare Clinical Occurrence

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ABSTRACT

Background: Symmetrical peripheral gangrene (SPG) is a rare clinical entity leading to ischemic necrosis of extremities. We report a case of SPG in patient brought into the orthopaedic clinic of Aminu Kano Teaching Hospital (AKTH), Kano, two days after applying a beautification substance called Henna. **Case Summary:** We report a case of a 28-year-old lady who presented at the emergency department of AKTH with a complaint of extreme pains in both hands and feet. The patient noticed a gradual darkening of the fingers and toes two days after applying the Henna, associated with severe pain at rest. She was thoroughly evaluated and examined for other possible risk factors or illnesses, but none was found. The patient was counselled and she subsequently consented to amputation. The gangrenous parts of the digits of her fingers and the tarsometatarsal of her feet were amputated bilaterally and the procedure was carried out successfully. **Conclusion:** To our knowledge, this is the first case report of symmetrical peripheral gangrene occurring after routine application of Henna as a beautification agent. No other possible risk factor was identified. We highlight the possibility of a beautification agent (Henna) as a causative factor of SPG. Thus, women should be careful of the mixtures in Henna that could lead to SPG.

Key words: Symmetrical, Bilateral, Gangrene, Henna, Amputation

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Introduction

Symmetrical peripheral gangrene (SPG) is a rare syndrome consisting of the sudden onset of symmetrical gangrene of the acral parts of the body with no evidence of significant vascular occlusive disease.¹ First described by Hutchinson in 1891, it is usually associated with a wide range of underlying medical conditions and may result in multiple limb

amputations. SPG is generally associated with disseminated intravascular coagulation (DIC).¹ The precise pathogenesis of vascular occlusion in SPG is uncertain.² However, a typical clinical presentation of SPG, despite the many aetiological associations, suggests DIC as a final common pathway of its pathogenesis. The ischaemic changes often begin distally and may advance proximally to involve the whole extremity.³

Case Presentation

A 28-year-old female patient presented to the Accident and emergency unit of Aminu Kano Teaching Hospital, Kano, with a 2-day history of pain and darkening of all her fingers. A week before presentation, she had developed constant pain at rest in her hands and feet after applying a locally prepared Henna mixture on all her digits. Her fingers and toes became dusky, with associated blistering of the fingers. She had no history of intermittent claudication. She does not drink alcohol nor smoke cigarettes and has no known chronic illnesses. There was no family history of diabetes mellitus, hypertension, heart disease,

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DOI: [10.311173/bomj.bomj_2307_19](https://doi.org/10.311173/bomj.bomj_2307_19)



dyslipidemias, and connective tissue disorders. Her past medical history was not significant. She was also negative for human immunodeficiency virus (HIV) and not on any medication. She had a pulse rate of 90 beats per minute, with blood pressure (systolic 120 mm Hg and diastolic 70 mm Hg). Examination of the hands showed mixed gangrene of all the fingers of the hands, which had started demarcating. She had good peripheral pulses in both upper limbs. In the lower limbs, she had gangrene on all toes. All the peripheral pulses in the lower limb were present and full volume. (See Figure 1.)

The patient had fluid resuscitation and empiric antibiotics, which were commenced on admission. The patient consented to amputating the gangrenous parts of her hands and feet. Hence, the amputation of the digits of her fingers and tarsometatarsal of both feet were done successfully. Post operational images are shown in Figure 2.



Figure 1: Demonstrating mixed gangrene of all the fingers of the hands and feet



Figure 2: Showing successful amputation of the digits of the fingers and tarsometatarsal of both feet.

Discussion:

Symmetrical peripheral gangrene is a clinical condition associated with symmetrical ischemia and gangrene of the distal extremities.^{1,4} SPG is

associated with a broad spectrum of infective and noninfective aetiological causes. Noninfective causes include but are not limited to malignancy, hypovolemic shock, myeloproliferative disorders, vasospastic conditions, connective tissue disorders like systemic lupus erythematosus (SLE) and antiphospholipid antibody syndrome, among other causes.^{1,3,4} 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.⁵ However, the underlying mechanism includes a low-flow state with disseminated intravascular coagulation (DIC). Despite the wide array of aetiological causes for SPG, failing to identify an underlying cause is not uncommon.⁵ While SPG is well documented in the literature, to our knowledge application of Henna for cosmesis has not been previously reported as a cause. In this case, the phenomenon was not precipitated by a known trigger of SPG, which is the application of a mixture of Henna, petrol, hydrogen peroxide (H_2O_2), 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. But there is a possibility the chemical reactions from the petrol, H_2O_2 , and urea fertilizer combination could spark a vaso-occlusive response that would lead to SPG. In the early stages of SPG, 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 is completely effective for the management of SPG. However, early recognition remains a critical factor in management.^{6,7} If peripheral perfusion appears to be uncertain, aggressive fluid resuscitation is recommended to discontinue or reduce the precipitating aetiology at the earliest possible opportunity. Treatment of sepsis and DIC with IV antibiotics and low-dose heparin, respectively, where feasible, should be instituted promptly.⁶ Other modalities tried with variable degrees of success includes sympathetic blockade, IV vasodilators, local injection or IV infusion of alpha-blockers, and IV prostaglandins, especially after the appearance of digital ischemia.^{6,7} Amputation of the gangrenous tissue(s) may become inevitable, but an initial nonsurgical approach allows time for the

patient's condition to stabilise and for the gangrene to become well-demarcated.

We report a 28-year-old female with no medical history suggestive of a known predisposing condition for SPG. She presented to the casualty ward after applying the Henna mixture leading to a rapidly progressing acral limb gangrene. This case was fascinating because the patient had no reduction in blood flow to distal peripheries (as evidenced by peripheral pulses). We were not able to ascertain if the cosmetic mixture's components, individually or in combination, contributed to the gangrene.

Therefore, we recommend that people be cautious in mixing harmful chemicals while applying Henna for beautification.

Conclusion

Although the Henna mixture combination may contribute to SPG, none of the constituent substances has been implicated in the literature as a predisposing factor for SPG. Awareness, early recognition, and prompt management, including adequate fluid resuscitation and removal of known aetiological agent(s), are necessary to avoid catastrophic outcomes.

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Cite this Article as: Abdullahi MA, Kabir MA, Mustapha MI, Mamuda AA, Shamsudeen MB. Symmetrical peripheral gangrene resulting from the application of Henna: A rare clinical occurrence. *Bo Med J* 2023;20(1):39-41 **Source of Support:** Nil, **Conflict of Interest:** None declared

