CASE REPORT

# Bilateral Gangrene of Lower Limbs in a Neonate

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## ABSTRACT

Limb gangrene in a neonate is an extremely rare clinical problem and bilateral symmetrical lower limbs type is even rarer. Only few clinical cases have been reported thus far with idiopathic etiology or associated with rare conditions. Known causes in literature are sepsis, extravasation of intravenous fluid, following a complicated delivery and secondary to invasive monitoring. This report describes neonate was first developed sepsis and later was exposed to cold leading to bilateral gangrene of lower limbs.

**Key Words:** *Gangrene. Lower limb. Neonate. Sepsis. Cold exposure.*

## INTRODUCTION

Gangrene is the term used to describe the decay or death of an organ or tissue caused by a lack of blood supply. It is called a dry gangrene when it is due to sudden loss of arterial blood supply to tissue, usually distal tissue like limb and toes. It is called a wet gangrene when the tissue is infected by saprogenic micro-organisms and occurs in naturally moist tissue and organs such as the mouth, bowel, lungs, cervix and vulva.[1] Clinical findings can range from mild involvement of skin to full thickness necrosis of involved region. Limb gangrene in neonate has been recognized since 1828.[2]

Known etiologies reported in literature are hyper-coagulable states, *in utero* arterial thrombosis, poly-cythemia, maternal diabetes, congenital bands, umbilical artery cannulation, intravenous hyperosmolar infusion, sepsis and cold exposure.[2,3] However, in majority of cases, an etiological factor is not identified. The first case report of bilateral symmetrical lower limb gangrene was reported by Gelfand.[4]

We present another case, a neonate with bilateral symmetrical lower limb gangrene due to sepsis and cold exposure.

## CASE REPORT

A full-term male infant was delivered by Lower Segment Cesarean Section (LSCS) at a private hospital to a 25 years old mother with uneventful antenatal history. Baby required no resuscitation at birth, and was handed over to mother who started immediate breast feeding. Baby was vaccinated according to EPI (expanded program of immunization) schedule and remained well for first 14 days of life. He then developed fever and reluctance to feed and was given home remedies for 2 days.

On the 16th day of life, he was admitted to District Head Quarter (DHQ) Hospital, where cold sponging was done due to fever. He developed bluish discoloration of both feet during cold sponging and was referred to us. On examination at our hospital, his temperature was 100°F, respiratory rate was 66 per minute, blood pressure 70/35 mmHg and capillary refill time (CRT) 3.5 seconds along with signs of dehydration (sunken eyes, dry mucous membranes, skin pinch going back slowly) and poor peripheral pulses. His feet were cold and black with overlying blebs and hyperemic proximal area (Figures 1 and 2). Rest of the clinical examination was unremarkable.

Laboratory investigations showed Hb 7.8 G/dl, Total leucocyte count was 2800/mm$^3$ with neutrophil count of 1800/mm$^3$ and platelets at 11000/cmm$^3$. Both PT (prothrombin time) and APTT (activated partial thromboplastin time) were prolonged whilst protein S, anti-thrombin lll and factor V Leiden were reduced. Blood urea was 416 mg/dl and serum creatinine was 11.9 mg/dl. Random blood sugar (RBS), D-dimmers, complete urine examination, liver function tests (LFTs) were normal. Peripheral blood film showed normo-cytosis with hypochromia, helmet cells and icanthocytes. Doppler scan for peripheral arteries showed popliteal arteries spasm more on left than the right and renal arteries were normal. Echocardiography and abdominal ultrasonography were normal.

He was managed with intravenous (IV) antibiotics, IV fluid, fresh frozen plasma (FFP), blood transfusion, peripheral vasodilators (amlodipine and local glycerin patch) and maintenance of temperature. Local area care was done with daily sofra tulle dressing. He started improving gradually, gangrenous spread stopped and line of demarcation moved distally than before. He started taking oral feed and his laboratory parameters gradually improved with normal renal parameters and bleeding profile. He was discharged after 23 days of stay

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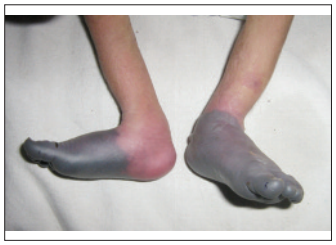

**Figure 1:** Gangrene involving both feet upto ankle on left side with visible blebs.

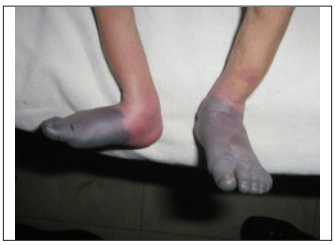

**Figure 2:** A close view of same kid showing gangrene with proximal hyperemia.

in hospital and is being followed-up for final line of demarcation of gangrene.

## DISCUSSION

Bilateral symmetrical gangrene of lower limbs in neonate is rare.[2] Less than hundred reported cases were found in literature.[3,5] Lookzadeh *et al*. described all four limb gangrene while Singh *et al*. reported unilateral limb involvement.[3,6] Upper limb gangrene is, however, more common as compared to lower limb[7].

Etiology was not identified in most cases; the most common causes cited in literature are sepsis, infant of diabetic mother, polycythemia, hyperosmolar intravenous infusions, umbilical artery cannulation and congenital bands.[2-5] Lookzadeh *et al*. reported leucocytoclastic vasculitis as a cause and Amita *et al*. and Dogra *et al*. described hypernatremic dehydration as a rare cause of limb gangrene in neonates.[8,9] The original case described by Gelf was not reported with an identifiable cause. In the presently reported case, sepsis and cold exposure appear to be the underlying cases.

In sepsis and dehydration, the low-flow state results in occlusion of the microcirculation of the affected parts. The ischemic changes begin distally and may progress proximally to involve the entire extremity. These changes are not ordinarily preceded by demonstrable peripheral vascular occlusive disease and give normal blood flow in larger vessels, and pelvic vessels in case of lower limbs.[10]

Management is usually symptomatic. Medical treatment includes systemic antibiotics, local dressings with antibiotics and use of systemic and local vasodilators. This worked in the present case with addition of intravenous hydration.

Amputation should be delayed as many cases improve without residual damage or spontaneously slough.[2,5] This case is also being followed for final slough live demarcation.

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