Case Report

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Case report on post COVID-19 penile gangrene

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ABSTRACT

SARS-CoV-2, a β -coronavirus, is a highly contagious respiratory pathogen that causes a disease. Penile Gangrene may be a rare manifestation in the post COVID-19 infection period in a non-vasculopathic patient. There may be an association with component of coagulopathy seen in COVID-19 patients. This case report describes a case with gangrene of penis in a young boy with concurrent COVID-19 infection. Clinical evaluation, investigation diagnostic workup and management of the patient was done in a routine basis. It was found that acute onset pain and blackening of his penis which developed after COVID-19 related symptoms in absence of any other identifiable cause. Unfortunately, the patient lost the involved body part and sustained a permanent disability. Early identification of such a morbid and disabling condition can help in preventing further spread of infection and may also prevent loss of organ or body part.

Keywords: COVID-19, Coagulapathy, Thrombogenesis, Gangrene

INTRODUCTION

SARS COVID-19 pandemic is a newly emerged respiratory tract viral disease effecting nearly all the nations in the world in which presentation is usually mild and uncomplicated in young population while the elderly are unfortunately at the higher risk of developing a morbid condition. 1,9 Apart from usual presentation of fever, cough, and breathlessness, there may be symptoms associated with defect in coagulation profile of the patient which may manifest as thrombotic tendencies.² Although very few such cases have been reported where gangrene of fingers and toes occurred in a COVID-19 positive patient.8 COVID-19 associated Penile Gangrene may be a manifestation in the post Infectious period in a nonvasculopathic patient. Literatures concerned with isolated dry penile gangrene in a Post COVID-19 patient are currently not available.10

The presented case report describes a very unusual case of isolated penile gangrene in a 16 years old young, non-

vasculopathic male who presented with acute onset pain and blackening of his penis which developed within three days. Patient also had a 10-days history of fever, sore throat, dry cough and breathlessness. He was tested positive on RT-PCR for COVID-19 on the day of admission.

CASE REPORT

Clinical evaluation

A 16 years old non-obese young male student presented with acute onset pain and blackening of penis associated with fever with chills and rigor. Patient also complaint of cough, breathlessness, loss of appetite and weakness and lethargy from the day of admission. Gangrene started at the glans of penis and gradually progressed towards the proximal end of shaft. This was accompanied by burning micturition and diffuse swelling and redness of the shaft of penis due to which patient was unable to pass urine. There was no past history of any thrombogenic event of any

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history of coagulation disorder in his family. Patient is a previously healthy, lifetime non-smoker and without any medical co-morbidity. There was no history of any trauma. He is not involved in any sexual activity

On examination, the dorsal portion of shaft and whole of the glans was gangrenous (Figure 1 and 2). Prepuce was absent (circumcised after birth). The skin over the penis shaft and scrotum was edematous and inflamed.

Sensations were lost over the gangrenous part of penis. Bilateral testis and cord structures were normal. Cremasteric reflex was present normally. There was no swelling in the bilateral inguinal region. Abdominal examination was within normal limits. Bilateral kidney were normal and non-ballotable. Other body parts including fingers and digits were within normal limits.



Figure 1: Lateral portion of shaft and glans at presentation.



Figure 2: Dorsal portion of shaft and glans at presentation.

Investigations

General blood picture revealed normocytic normochromic RBC without anisocytosis. Routine blood investigations like Serum levels of electrolytes, urea, creatinine and lipid profile were within normal limits. Total leucocytes showed mild neutrophilic elevation. Severe thrombocytopenia (platelet count- 59000). Alkaline phosphatase was raised

to 260 IU/l. All blood coagulation profile was within normal limits except D-dimer levels which were raised to 42 mcg/ml. C-reactive protein was elevated and serum procalcitonin levels raised to 13.8 ng/ml. Serum ferritin levels were also raised at 766 ng/ml. Routine blood investigation pointed towards typical of a COVID-19 related Severe acute respiratory illness (SARI).

Specific haematological tests such as RBC solubility (sickling) test, malarial parasite and dengue antigen were all negative.

Plain X-ray chest revealed multiple patchy infiltration seen predominantly involving peripheral and lower zones of both the lung fields.

Ultrasonography of kidney, ureter and bladder, inguinoscrotal and pelvic region all were within normal limits.

Colour Doppler study of penis revealed absence of any obvious colour flow in the distal part of dorsal artery of penis suggesting obstructed proximal arterial lumen.

CT scan thorax showed bilateral fibrotic changes with typical peripheral ground glassing, with multiple cannon ball like lesions most probably cavitating septic emboli seen dispersed in the lung parenchyma (Figure 3). Contrast CT abdomen and brain were within normal limits.

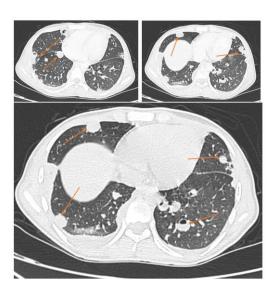


Figure 3: CT scan of thorax.

Differential diagnosis

As the disease process was acutely developed dry gangrene with reduces flow in the dorsal artery of penis, it becomes important to rule out other conditions causing arterial blockage. The typical tests of sickle cell anaemia were negative. Rarely Raynaud's disease can lead to dry gangrene but it usually involves fingers and digits. Being young patient with physically active lifestyle and a normal lipid profile one can rule out any atherosclerotic change.

As the patient was a non-smoker and was not involved in any kind of addiction, chances of Hypercoagulable state due to Buerger's disease are also rare. There are chances of arterial involvement in a locally advanced cancer or Hematogenous spread of malignant seedings which might get transformed into a thrombus due to platelet sticking and eventually blocking the artery. There was no evidence of such malignancy being ruled out clinically and radiologically.

Absence of any history of trauma rules out traumatic arterial occlusion.

The patient was admitted in surgery emergency where suprapubic cystostomy was performed in emergency and fasciotomy of penile shaft was done by giving two longitudinal relaxing incisions (Figure 4).



Figure 4: Post fasciotomy incision.

Culture of wound swab revealed mixed aerobic gramnegative organisms.

Patient had history of cough and breathlessness for last one week for which he did not seek any medical treatment. On admission, he was suspected to be COVID-19 positive which was confirmed by positive nasal swab for COVID-19. So, as per local COVID-19 guidelines, therapy with doxycycline, hydroxychloroquine, dexamethasone, low molecular weight heparin and ivermectin was also added along with broad spectrum antibiotics. Patient remained vitally stable throughout the treatment with oxygen saturation not dropping beyond 96 percent. As such there was no need of supplementary oxygen therapy.

He was also worked-up for vasculitis, any hypercoagulable state such as sickle cell anaemia, Clotting abnormalities, thrombotic tendencies and any neoplasm. The results were negative and not leading to any other definitive diagnosis.

Patient remained in COVID-19 hospital for one month on conservative management including regular cleaning and dressing of the penis. The gangrenous glans gradually separated out from the rest of the penile shaft and got autoamputated after 15 days. Patient was kept under broad spectrum antibiotics like meropenem and linezolid. Anticoagulation therapy was also started in the form of tab Ecosprin 75 mg twice daily as per local COVID-19

guidelines. Aggressive pain management was done by opioid analgesics. He was orally fed and was under high nutrient diet.

Outcome and follow up

The patient remained in the hospital for about two weeks after his penis got auto amputated and wound started healing as a result of regular dressing. Patient was discharged on broad spectrum antibiotics for another two weeks. He was followed after 15 days to encourage maintenance of local hygiene and was counselled for his disabled sexual activity.

DISCUSSION

Isolated penile gangrene, a very rare entity is reported in very few literatures. Dry gangrene of penis or digits may occur as a result of increased thrombotic tendencies.

Pathogenesis of the disease is attributable to thromboinflammation and endothelial injury. The coronavirus binds with alveolar epithelial and endothelial ACE-2 receptors dysregulating angiotensin signalling and subsequent inflammation and tissue injury due to overproduction of pro-inflammatory cytokines (cytokine storm), including TNF, IL-6, IL-8, and IL-1\beta.\frac{1}{2} Subsequent increased signalling of thrombin and purinergic receptors activate platelets, epithelial cells, and fibroblasts further enhancing inflammation and injury. Complement activation by direct endothelial infection which includes release of anaphylatoxin C5a further activates the coagulation system.³ Hypercoagulability here plays a key role in determining the prognosis.⁴ Increasing reports of thrombotic events, including strokes, pulmonary embolism, cutaneous and digital arterial occlusions have been noted.^{5,6} Micro-thrombosis in lungs is noted as high as 80% in autopsy of fatal COVID-19.7

CONCLUSION

The pattern of thrombotic tendency after COVID-19 infection is highly unpredictable with respect to the site or organ involvement. On the basis of detailed clinical evaluation and advanced diagnostic tools, it can be said that the post infective phase of COVID-19 may lead to miserable disabilities due to complete or partial loss of function of any organ or body part. So, it is mandatory to work up for blood coagulation profile and adding blood thinning drugs and anticoagulants in the treatment protocol of COVID-19 patients. Periodic monitoring of coagulation profile should be done in such a case. Gangrene once developed has no chance by any means to get revert and the organ or body part thus cannot be salvaged. The disability in this case is more challenging due to the loss of reproductive organ in a young boy. Preventing such a disability is possible by timely identification and prompt management. Early management prevents the resection of the other organs by inhibiting the contiguous spread of infection.

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