Case Report

Neonatal Fournier's Gangrene

Subhajeet Dey MS•[1], Kincho L. Bhutia MS[1], Anil K. Baruah MS[1], Bikram Kharga DNB[1], Pradip K. Mohanta MS[1], Varun K. Singh MBBS[1]

Abstract:

Necrotizing fasciitis of the perineum and external genitalia is a life-threatening infective gangrene, primarily seen in adults. It may be seen at any ages but it is rare in neonates and infants. Here, we report a case of Fournier's gangrene in a 21 day old male neonate who was treated aggressively with broad spectrum antibiotics and early surgical debridement with hemodynamic stabilization. Even though no obvious precipitating cause was identified, hygiene was thought to be the inciting factor. Early surgical debridement with appropriate antibiotics and aggressive supportive care gives good results and probably in our setting, to some extent, it is a preventable condition.

Key words: Fournier's gangrene, hygiene, neonate

Introduction

In 1883 the French venerologist, Jean Alfred Fournier, described a series of five previously healthy young men who suffered from a rapidly progressive gangrene of the penis and scrotum without apparent cause.[1] Since then, this condition has been reported worldwide, most commonly amongst adults. Even though age is not a barrier, it is rarely seen in pediatric age groups.[2]

Case Report

A 21-day-old male baby, son of a farmer, was admitted to the General Surgical Unit of Sikkim Manipal Institute of Medical Sciences, Sikkim, India with complaints of progressively increasing scrotal swelling with discoloration of the scrotal skin 10 days prior to admission, abdominal distension from 5 days prior, and vomiting since 3 days, with normal bladder and bowel habits. The baby did not have a history of fever. Birth history did not reveal any abnormality and the patient's birth weight was 3400 grams. There was no history of any type of surgical intervention, injury to the perineum or lower abdomen, catheterization, insect bite, or other predisposing conditions.

On examination the baby was dehydrated, in poor general condition, afebrile and had decreased activities. Scrotal skin was found to be grayish in color, parchment-like with sharp and clear demarcation with the normal skin, and extending up to the perineum (Figure 1). Skin over the medial part of the right thigh was involved, in that it was ulcerated with grayish slough at the floor with serous discharge. The skin of the shaft of the penis was also involved and ulcerated. The surrounding normal skin was found to be erythematous and edematous. Other systemic examinations were within normal limits with the exception of mild gaseous abdominal distension.

Figure 1. Showing grayish parchment like scrotum and also involvement of thigh as well as penile skin.

Authors' affiliation: 1Department of Surgery, Sikkim Manipal Institute of Medical Sciences, Sikkim, India.
•Corresponding author and reprints: Subhajeet Dey MS, Department of Surgery, Sikkim Manipal Institute of Medical Sciences, 5th Mile, Tadong, Gangtok-737102, Sikkim, India. Tel: +91-9434755078(M), +91-3592-271060(R)
E-mail: subhajeetd@gmail.com, subhajeetdey@yahoo.co.in
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Investigations revealed a leukocyte count of 20,000/mm^3 with 78% neutrophils. Hemoglobin was 10.0 mg/100 mL, blood urea 74mg/100 mL, and serum creatinine 1.8 mg/100 mL. Serum electrolytes were normal. An abdominal X-ray showed the presence of distended bowel loops, whereas an ultrasonography of the scrotum and perineum demonstrated thickened fascial planes with edema. Chest X-ray was normal.

The baby was vigorously resuscitated with intravenous fluids and broad spectrum antibiotics, which covered both aerobic and anerobic organisms, in addition to other supportive measures. Surgical debridement was undertaken under general anesthesia with endotracheal intubation and all devitalized and necrotic tissues were excised, up to the level of normal skin until active bleeding was encountered, thus exposing the unaffected testes. Penile and the thigh lesions were also debrided to the area of active bleeding (Figure 2). The wound was copiously irrigated with dilute hydrogen peroxide solution and normal saline; then packed with a povidone iodine soaked gauze pack. This dressing protocol was continued in the postoperative period. Wound swab showed growth of *Staphylococcus aureus* and *Klebsiella* species and antibiotics were continued according to the sensitivity report.

Figure 2. Post debridement picture showing healthy bleeding from margins and unaffected testes.

Subsequent investigations showed progressive fall in blood urea, serum creatinine and total leukocyte count. The blood culture report was negative. Antibiotics and other supportive treatment along with regular dressing were continued in the postoperative period which led to a fairly rapid contraction of the wound. The patient's parents were properly counseled during the postoperative period regarding the maintenance of proper hygiene and its importance. Secondary repair of the wound was done on the 23rd postoperative day. Subsequently the baby was discharged home after removal of sutures on the 30th postoperative day.

Discussion

Fournier's gangrene is a serious and aggressive form of infective necrotizing fasciitis involving the perineal region and genitalia due to poly microbial infection.[3] The bacteria act synergistically to produce enzymes such as collagenase and hyaluronidase that invade the fascial planes which leads to vascular thrombosis with subsequent gangrene of the overlying skin.[4] Bacteria further proliferate in these devitalized tissues. Infection from the superficial perineal fascia may spread to the penis and scrotum or to the anterior abdominal wall or vice versa. Testicular involvement is rare as it has a blood supply independent of the affected area, as evident in our case. The condition mostly affects males in the age group of 30 – 60 years. A 1997 literature review found only 56 pediatric cases, with 66% of those in infants younger than 3 months.[5] Although originally described as idiopathic gangrene of the genitalia, Fournier's gangrene has an identifiable cause in approximately 95% of cases.[6] The necrotizing process commonly originates from an infection in the anorectum, the urogenital tract, or the skin of the genitalia.[7] The reported etiological factors in the pediatric age group include omphalitis, strangulated hernia,[2] prematurity, diaper rash, varicella infection,[8] circumcision, and perineal skin abscesses.[9] Other causes in children include trauma, insect bites, surgeries or invasive procedures in the perineal region, urethral instrumentation, burns, and systemic infections. In children the causative organisms usually are streptococci, staphylococci, and anerobes.[10] In our case, there was no identifiable cause precipitating the condition. The only obvious feature was poor general hygiene.

Usually the diagnosis is clinical, even though a plain X-ray of the region may demonstrate gas in the subcutaneous and other tissue planes. Ultrasound may differentiate it from an intra scrotal pathology.[6]

The management of Fournier's gangrene includes early and aggressive resuscitation with IV fluids, broad spectrum IV antibiotics and surgical debridement of the necrotic tissue.[1–3] Our patient also responded to this aggressive modality of treatment and skin coverage was achieved with secondary suturing. Hyperbaric oxygen has shown some promising results in the management of this condition.[3,11,12] This therapy needs to be balanced with the stability of the patient. Surgical debridement should not be delayed for consideration of hyperbaric oxygen. Mortality as reported by different authors ranged from 3% to 45% and was due to severe sepsis, coagulopathy and renal failure.[13] A high index of suspicion and prompt diagnosis, along with surgical debridement and a multidisciplinary approach are the mainstays of management in children with Fournier's gangrene.[8]

Hygiene has a role to play in almost all skin infections and Fournier's gangrene is no exception. Since this patient had poor hygiene and no obvious inciting factors were found, we have concluded that poor hygiene can be a cause of neonatal Fournier's gangrene. Proper health education regarding good hygiene of a neonate to the parents can probably prevent neonatal Fournier's gangrene.

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