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RESEARCH ARTICLE

FOURNIER'S GANGRENE, FATAL ADVERSE EVENT POST MEDICAL MALE CIRCUMCISION

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ABSTRACT

Male circumcision has been shown to significantly reduce the risk of HIV infection through heterosexual intercourse by as much as 60% and medical male circumcision strategy was adopted as an additional prevention intervention in Namibia since 2009. Fournier's gangrene defined as a polymicrobial necrotizing fasciitis of the perineal, perianal or genital areas, is rare but life-threatening disease. We report a case of 14 years old male who developed Fournier's gangrene four days after male circumcision performed using the dorsal slit technique under local anaesthesia, in a local primary school during a circumcision camp, patient recovered following early debridement done under general anaesthesia and coverage on broad-spectrum antibio-therapy followed by daily dressing.

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INTRODUCTION

Fournier gangrene is defined as a polymicrobial necrotizing fasciitis of the perineal, perianal, or genital areas (Pais, 2017). Below we describe a case of Fournier gangrene after Medical Male circumcision occurred in Omusati Region, Outapi district hospital in Namibia. The aim of this case report is to increase the awareness about this rare adverse event (AE) in the context of voluntary medical male circumcision (VMMC)

Case presentation: We report a case of 14 year old male previously well, who visited a voluntary medical male circumcision services at OKANIMWEKA PS on the 19 May 2017, and he went through Male circumcision procedure under local anaesthesia. Dorsal slit technique, haemostasis was achieved using monopolar diathermy and the skin was sutured using polyglycolic acid(PGA) suture 3/0, followed by daily dressing with paraffin gauze and dry gauze. One day after circumcision procedure, the patient started complaining of pain and swelling of the scrotum and the glans penis; he visited the male circumcision site the next day for 48 hours review. Salty bath was instructed to the patient. The worsening of the painful swelling motivated the consultation at our emergency department at Outapi District Hospital.

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On admission, the patient was apyrexial with tempreture of 36°c, random blood sugar 5,6mmol/L. The general condition was dominated by the pain; the local examination reveals a tender swollen scrotum, reddish with ulcerative lesions. Laboratory tests revealed white cell count of 10,4x109/L, Haemoglobin10.4 g/dl, s-Potassium 3.6mmol/L, s- Sodium 117mmol/L, s-Urea 4.5mmol/L, s-creatinine 49umol/L and HIV which was negative. Patient was put on parenteral antibiotics: Cefuroxime, gentamicin, metronidazole and adequate analgesia and the hyponatremia was corrected. First scrotal aggressive debridement done under general anesthesia the third day post admission followed by daily dressing with eusol solution (prepared from chlorinated lime and boric acid). The condition of the patient remained stable but locally, the progression of the scrotal necrosis was quite remarkable, the patient was taken to theatre for a series of another aggressive debridement under general anaesthesia on day seven and fourteen post admission. The patient was kept in the ward for daily dressing and was discharged after 25 days for daily dressing at a local clinic. The complete healing of the wound was achieved after 7 weeks post discharge. Fournier's gangrene is a rare occurrence after adult male circumcision with associated high morbidity. This is just one of the rare descriptions in the Voluntary Medical Male Circumcision (VMMC) era.

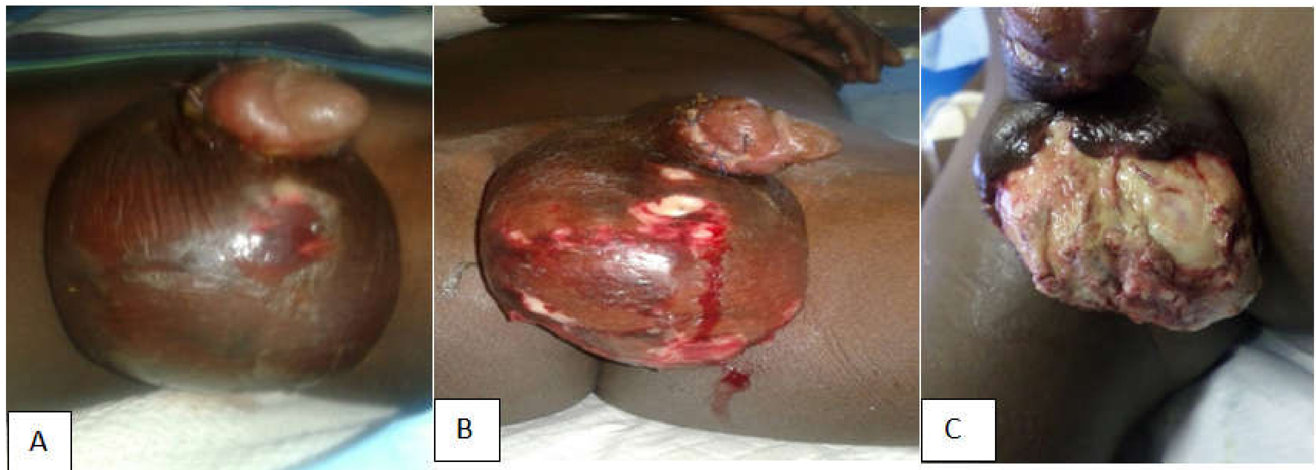

Figure 1. A: day 3 after male circumsion ,B: day 4 after circumcision and day 1 post first debridement , C:day 7 wound exposed before the 2nd debridment

Figure 2. Day 14, exposed wound (D and F) and post last debridement (F)

DISCUSSION

Medical male circumcision is the surgical removal of the foreskin, the fold of the skin that covers the head of the penis (Ersay *et al*., 2007). The foreskin is freed and the excess is cut off. In the advent of Mass voluntary medical male circumcision for the partial prevention of HIV, previously rare adverse events associated with male circumcision will likely be encountered. Medical male circumcision procedure might have some complications like any other surgical procedures, oftentimes mild (mild bleeding, pain, swollen, mild infection) and rarely severe that can result to poor outcome even death (Eke, 2000) (sepsis, tetanus, Fournier's gangrene). Fournier's gangrene described originally by Baurienne in 1764 as an idiopathic, rapidly progressive soft tissue necrotizing process. Jean Alfred Fournier presented a case of a perineal gangrene in an otherwise healthy young man in 1883 during one of the Fournier clinical lecture. Fournier gangrene carries a high mortality rate and continues to be the major challenge to the medical community (Czymek *et al*., 2009). Fournier gangrene was first identified in the year 1883, when the French venereologist Jean Alfred Fournier described a series in which five previously healthy young men suffered from a rapidly progressive gangrene of the penis and scrotum without apparent cause (Ekelius *et al*., 2004).

In contrast to Fournier's initial account, the disease is not limited to young individuals or to males, and a causative agent is currently identified. Localised infection adjacent to a portal entry is the inciting in the development of the condition. An obliterative endarteritis develops, and the ensuing cutaneous and subcutaneous vascular necrosis leads to localised ischemia and intensive bacterial proliferation with high rate of fascia destruction as 2 to 3 cm/h (Furr *et al*., 2017). Fournier gangrene is characterized by high rate of mortality raging from 15% to 50 % and consider as an acute urological emergency. The good practice in Voluntary Medical Male Circumcision prescribe a client screening prior to surgery in other to identify Male circumcision relative and absolute contraindications and some other predictors risk factors to a certain surgical outcome such as diabetes mellitus, immune suppression, ,alcoholism, smoking, malnutrition, obesity, chronic use of corticoid. After the surgery, 48H and 7 day review should examine the male circumcision wound and also the shaft of the penis, the scrotum to notify any abnormalities such as the changing of the colour, scratches, swelling. Genitalia trauma, (e.g. accidentally burning of the genitalia skin with the diathermy), male circumcision wound are the entry door of bacteria that initiate the infectious process that may lead to gangrene. Several patients under the age of 15 years have poor hygiene, skin adherence that may keep an offensive smegma in the subpreputial space which may be colonized by drug-resistant

organisms as shown in Kano, Nigeria where a total of 50 bacterial isolates were made with 58% gram-positive bacteria and 48% gram-negative ones among asymptomatic boys between the age of 7 and 11 years. Those bacterial may colonise the genitalia through the male circumcision wound or any other genital trauma (Gürdal *et al*., 2003). The cornerstones of management in this life-threatening condition are urgent patient resuscitation, broad-spectrum antibiotic therapy and surgical debridement (Villanueva-Sáenz *et al*., 2002). Early surgical intervention in term of aggressive debridement is associated with lower Fournier gangrene fatality and remains the crucial step in halting progression of the infection (Sorensen, 2016). In our case, the patient was covered with parenteral Cephalosporine second generation, amino side and metronidazol. The first debridement was done 3 days after the admission under general anaesthesia and daily dressing with eusol instructed. With the advent of mass male circumcision in sub-Saharan Africa, we are likely to see more adverse events. The treatment of Fournier's gangrene, regardless of aetiology, involves aggressive debridement, intravenous antibiotics, fluid resuscitation and management of underlying morbidities such as diabetes by controlling the blood sugar (Sugihara *et al*., 2012). Despite advances in the evaluation, treatment, and pathophysiological understanding of necrotizing soft-tissue infections, Fournier's gangrene remains a life-threatening urological emergency (Chen *et al*., 2011). Although the condition can affect patients of any age and gender, it might be more prevalent in some high-risk groups with certain comorbidities (Hagedorn, 2016). Several prognostic and diagnostic tools have been developed to assist with clinical decision-making once the diagnosis is made-primarily based on the physician's physical exam and potentially supported by laboratory and imaging findings (Sugihara *et al*., 2012). Early therapy is the key, including hospitalization, debridement of the entire shaft of the penis distal to the devastated area, without excising the normal skin, parenteral broad-spectrum antibiotics, and skin grafting (Talwar *et al*., 2010).

Conclusion

Fournier's gangrene is very rare adverse event in the context of VMMC and associated with a long duration of hospitalization and high mortality. Early diagnosis and proper management including intravenous antibiotic and early repeated aggressive debridements are life saving and minimizing the serious consequences related to the condition. Because it can be life-threatening, providers in VMMC programmes need to be familiar with the rapid identification and management of this serious condition.

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