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VAC: A MIRACULOUS THERAPY IN MANAGEMENT OF FOURNIER'S GANGRENE.

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ABSTRACT

Introduction: Fournier was the first one to describe an unexplained gangrene over the male genitalia in 1883 after which such a condition is referred to as the Fournier's gangrene.[1] Fournier's gangrene (FG) is an acute, rapidly progressive and potentially fatal, infective necrotizing fasciitis affecting the external genitalia, perineal or perianal regions, which commonly affects men, but can also occur in women and children.[2] Despite advanced management mortality is still high and averages 20–30%.[3] **Case report:** A 55 year old male patient admitted to our hospital with complaints of pain in the scrotal region, high grade fever and uncontrolled diabetes mellitus with diabetic ketoacidosis and in septicaemia shock. Fluid resuscitation was done, broad spectrum antibiotics were given and surgical debridement was done. After which regular dressings were done and once the infection had subsided patient was started with VAC Therapy. With this the wound improved drastically and no further surgical debridements were needed. **Conclusion:** FG is a rare but severe condition with a high morbidity and mortality. Though aggressive multidisciplinary management is mandatory, VAC therapy certainly helps to improve the FG by reducing the need for subsequent debridements, faster recovery, lesser hospital stay and significantly reduces morbidity.

KEYWORDS: Fournier's gangrene (FG), Diabetes Mellitus, Vacuum Assisted Closure (VAC) Therapy.

INTRODUCTION

Fournier was the first one to describe an unexplained gangrene over the male genitalia in 1883 after which such a condition is referred to as the Fournier's gangrene.[1] Fournier's gangrene (FG) is an acute, rapidly progressive, and potentially fatal, infective necrotizing fasciitis affecting the external genitalia, perineal or perianal regions, which commonly affects men, but can also occur in women and children.[2] Despite advanced management mortality is still high and averages 20–30%.[3] FG results in thrombosis of small vessels, obliterative endarteritis, and eventually skin and tissue necrosis.[4] FG is an acute surgical and urological emergency. Predisposing factors believed to contribute to the development of the disease are diabetes mellitus, alcoholism, malignancies, immunosuppression, liver, and renal disease.[5–7] Fournier's gangrene is caused by normal skin commensals of the perineum and genitalia that act synergistically to cause infection and invade the tissue, causing microthrombosis of the small subcutaneous vessels leading to ischemia. Various cytotoxic agents (for example, collagenases and streptokinases) are released at the gangrene site and cause the progressive destruction of local tissue. Therefore, good management is based on hemodynamic stabilization, aggressive debridement, broad- spectrum antibiotic therapy and intensive supportive care.

We present a case of Fournier's gangrene with Multiple organ dysfunction syndrome (MODS) due to septicaemia in a patient with uncontrolled diabetes mellitus with diabetic ketoacidosis which was successfully treated in our hospital despite the severity of the patient's condition. This was done with surgical debridement, Vacuum Assisted Closure (VAC) Therapy and strict diabetic control.

CASE REPORT

A 55-year-old male patient was admitted to our hospital with severe scrotal and perineal pain with swelling of the left side of scrotum and high grade fever (39◦C). The patient was moderate built and a known case of diabetes mellitus under (uncontrolled). Clinically, the patient was in septicemic shock with tachycardia (124/min) and hypotension. Necrotizing fasciitis with extensive cellulites of the perineum and left lower abdominal wall. Crepitations between the skin and fascia were palpable.

Patients Hemoglobin was 11gm%, white blood cell count was 11400/µL, C-reactive protein (CRP) was 20mg/dL, blood glucose was 347mg/dL, blood urea was 53.61mg/dl, Creatinine was 1.83mg/dl and urine glucose was 3+ and ketones 4+. Ultrasound of the lower abdomen

and pelvis Revealed bilateral inguinal canal showing subcutaneous edema with left sided pyocele/? Fournier's gangrene. A diagnosis of Fournier's gangrene with multiple organ dysfunction syndrome (MODS) due to septicaemia with diabetes mellitus and diabetic ketoacidosis.

Preoperative antibiotic treatment with broad-spectrum antibiotic combinations was initiated. The patient underwent aggressive fluid administration and hemodynamic support with diabetic ketoacidosis management with insulin infusion. He was treated with immediate extensive surgical debridement under general anesthesia. In Left hemi scrotum foul smelling discharge with necrosed tissue was noted. Lesion was extending to the Bilateral inguinal region. Both testicles were viable and preserved. Lower abdominal wall was also necrosed, desloughing of the necrotic tissue was done.

Subsequently daily dressing of the lesion was done. By13th post operative day wound infection had reduced and granulation tissue appeared so patient was started with negative pressure vaccum therapy was given every alternate day (Figure 1). With negative pressure vacuum therapy the wound improved drastically such that no subsequent debridement was needed. Doppler ultrasound was done on the 23rd day postoperative and viability of the testicles was confirmed. Primary wound closure was done on 25th postoperative day (Figure 2). To cover the exposed penile shaft scrotal flap and right medial thigh flap were used. Strict diabetic control was maintained with parenteral insulin.

DISCUSSION

The syndrome of FG is an uncommon but quite serious problem. This entity affects both men and women and at a wide age range, from neonates to the very elderly. Despite this, the mean age of patients appears to range from 40 to 50 years.[2] Our patient was 55 years old, which is in accordance to some recent reports of an increase in the peak age incidence.

The infection arises from bacteria inoculation in the perineal area. This procedure can be facilitated by an impairment in the immune system; diabetes mellitus, alcoholism, malignancies, leukemia, treatment with steroids, AIDS, renal failure, and hemodialysis predispose to the development of FG.[5-7] Diabetes mellitus, in particular, represents an apparent associated factor due to the defective phagocytosis, the increased incidence of urinary tract infections as a result of functional urinary tract obstructions from diabetic

neuropathy and disease of the small vessels.[7] In our case, the patient suffered from diabetes mellitus and diabetic ketoacidosis.

The most common clinical features are perianal pain and swelling if the anorectal area is the portal of entry, whereas urinary retention, testicular, or scrotal pain are present if the infection launches from the genitourinary tract.[8] Other systemic manifestations such as fever, tachycardia, electrolyte imbalances and hyperglycemia may also be present. Our patient had severe perineal pain, scrotal oedema, crepitus, fever, tachycardia, and low blood pressure.

Once the diagnosis of FG is established management are aggressive hemodynamic stabilization and parenteral broad-spectrum antibiotics. In order to ensure a successful outcome, the critical step is urgent and extensive surgical debridement.[1, 9, 10]

Testes and spermatic cords are generally not affected by this disease, because they are supplied by the testicular artery. In some studies, patients underwent orchiectomy when severe infection in the peritesticular tissues was observed intraoperatively.[9] In our patient both the testes and spermatic cord were viable and hence preserved. This was confirmed postoperatively with the help of colour doppler.

Important adjunctive treatment reported in the literature is VAC, which is currently used for wound complications and is an easy and reliable method that significantly promotes better healing. The negative pressure applied by the de- vice on the wound removes exudates, securely covers the wound, stimulates angiogenesis, and reduces bacterial contamination.[11] VAC therapy combined with broad spectrum antibiotics reduces the need for multiple debridements in a case of FG and results in faster healing.[12] This was consistent in our patient in whom after the initial debridement no further debridement was needed due to the use of negative pressure VAC therapy.

Figure1: Healthy granulation tissue seen after VAC Therapy.

Figure 2: Primary wound closure of FG with medial thigh flap.

CONCLUSION

FG is a rare but severe condition with a high morbidity and mortality. Though aggressive multidisciplinary management is mandatory, VAC therapy certainly helps to improve the FG by reducing the need for subsequent debridements, faster recovery, lesser hospital stay and significantly reduces morbidity.

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