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Case Report

A case of Fournier's gangrene caused by *Rothia dentocariosa*

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ABSTRACT

We report a case of Fournier's gangrene rescued by debridement. A 40-year-old male patient had a 2x2 cm draining ulcer and 1x2 cm necrotic area in the scrotum for about a month. The patient was diagnosed with Fournier's gangrene. Septic shock and disseminated intravascular coagulation were absent. Computed tomography scan showed soft tissue gas in the scrotum but no gas in the retroperitoneal space or abdominal wall. Debridement was performed. Gangrene of the scrotum and necrosis of the testicle was also seen. *Rothia dentocariosa* was isolated in extracted wound cultures. He was saved after debridement and administration of strong antibiotics. This is the first case of Fournier's gangrene caused by *R. dentocariosa* in the available literature.

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Un caso de gangrena de Fournier por *Rothia dentocariosa*

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RESUMEN

Presentamos un caso de gangrena de Fournier rescatado mediante desbridamiento. Un paciente varón de 40 años presentó una úlcera supurante de 2x2 cm y un área necrótica de 1x2 cm en el escroto durante aproximadamente un mes. El paciente fue diagnosticado con gangrena de Fournier. El shock séptico y la coagulación intravascular diseminada estaban ausentes. La tomografía computarizada mostró gas en los tejidos blandos del escroto, pero no en el espacio retroperitoneal ni en la pared abdominal. Se realizó desbridamiento. También se observó gangrena del escroto y necrosis del testículo. Se aisló Rothia dentocariosa en cultivos extraídos de heridas. Se salvó después del desbridamiento y la administración de antibióticos fuertes. Este es el primer caso de gangrena de Fournier por R. dentocariosa en la literatura disponible.

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1. INTRODUCTION

Rothia dentocariosa is an aerobic, Gram-positive, round to rod-shaped bacterium that is a member of the flora of the mouth and respiratory tract in humans [1]. This bacterium is catalase positive, reduces nitrate and nitrite, hydrolyzes esculin, and produces acid from glucose, sucrose, maltose, salicin, and glycerol. The relevance of recognizing this organism is based on the fact that it is commonly isolated from human clinical material and that the *Actinomyces* and *Nocardia* spp., which contain pathogenic species, have physically comparable features [2]. *R. dentocariosa* strains are usually isolated from dental plaque and have the capacity to attach to glass surfaces [3].

Fournier gangrene (FG) which is a form of necrotizing fasciitis, is also known as idiopathic scrotum gangrene, periurethral phlegmon, synergistic necrotizing cellulitis and streptococcal scrotum gangrene. Because of occlusive endarteritis of the arteries of the subcutaneous tissue, gangrene develops in the subcutaneous tissue and the overlying skin [4, 5].

R. dentocariosa, a member of the oral flora, has been isolated from different human infections Although it is frequently the causative agent of endocarditis, pneumonia, it has also been reported as a causative agent in infections such as soft tissue abscess, endophthalmitis, septic arthritis, bacteraemia, brain abscess, peritonitis [6-14]. However, no similar case associated with FG was found in the available literature. This report discusses a case of FG caused by an unlikely pathogen, *R. dentocariosa*, in a patient without any underlying risk factors.

2. CASE REPORT

A 40-year-old male patient had no history of chronic disease. He did not describe any history of trauma. He stated that he had pain in the right testicle for about a year and an ulcer appeared on the lower right end of the scrotum for the last month. He stated that purulent, foul-smelling discharge had been coming from the ulcer for the last five days and he had been using intramuscular ampicillin-sulbactam and gentamicin treatments for the last month for these complaints, but his complaints had progressed further. He did not describe any additional systemic symptoms such as fever, chills and chills. General condition was good, vital signs were stable and blood pressure was normal. He was oriented and coherent. His body mass index: 23.8 = kg/m^2. Genital examination revealed oedema, hyperaemia and increased temperature in the scrotum. A 2x2 cm draining ulcer and a 1x2 cm necrotic area was observed superior to the ulcer. In his laboratuary examination, white blood cell (WBC): 21800/uL (normal range: 4000-12000/uL), hemoglobin: 12.8 g/dL (normal range: 12-16 g/dL), platelet count 207×10^9/L (normal range:150-450), erythrocyte sedimentation rate (ESR): 52 mm/ hr (normal range: 0 -15 mm/hr) and C-reactive protein (CRP): >40 mg/L (normal range: 8-10 mg/L). Creatine kinase and lactate levels were within normal limits. Upon detection of these findings, an emergency operation was planned by urology with a prediagnosis of FG. The computed tomographic scan revealed soft-tissue gas in the scrotum but no gas in the retroperitoneal cavity or the abdominal wall. We were

consulted for perioperative empirical antibiotherapy recommendations. The patient was started on meropenem IV 3x1 gram IV and vancomycin IV 2x1 gram IV empirically. During the operation, it was found that the blood supply to the right testicle and cord was impaired and there was an abscess around it. Abscess drainage, debridement of necrotic tissues and right orchiectomy were performed. The devitalized tissue was completely removed. Intraoperative cultures were sent from the abscess and infected tissue (Figure 1). In addition, a tissue sample was sent to the pathology laboratory. Vacuum-Assisted Closure (VAC) therapy was applied for postoperative wound treatment.

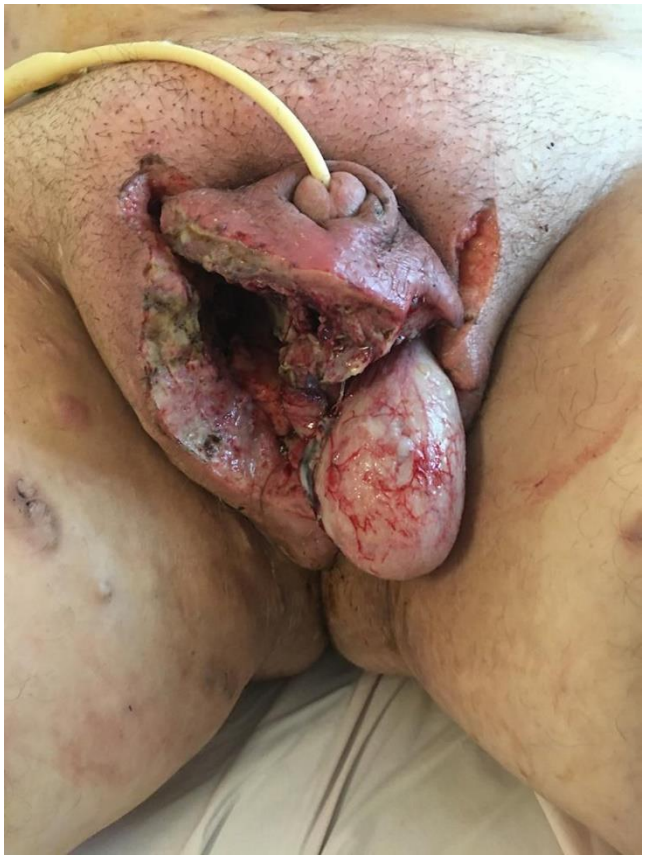

Figure 1*: View of the genital area after debridement.*

The bacterium grown in the intraoperative abscess and tissue cultures was identified as *R. dentocariosa* on the PMIC card run on the BD PHOENIX M50 device. The patient's current antibiotherapy was continued. Pathologic examination of the intraoperatively sent tissue revealed necrosis, abscess, oedema and chronic inflammation in the testis and scrotum. Control laboratory tests revealed WBC 6100/uL, ESR: 4 mm/hr and CRP: 4 mg/L. After 14 days, the application of VAC was stopped. After the removal of necrotic tissues, VAC therapy and administration of intravenous antibiotherapy for 21 days, his vitals and laboratory values were completely normalized. He responded favourably to the treatment. Along with applying povidone-iodine topically, the usual wet dressing was applied. His wound was repaired using secondary suturing on the 21th postoperative day. On the 32th day following first surgery, he was discharged. The patient was symptom-free when examined four weeks later.

3. DISCUSSION

Despite its typical presence in the mouth, *R. dentocariosa* appears to cause infection very infrequently beyond the oral cavity. However, as more reports come in, there is no question that this organism should be recognized as having the potential to cause significant disease in human [14]. In 1978, *R. dentocariosa* was isolated from a pilonidal abscess [6]. It has been also reported as a causative agent of endocarditis [7-9], pneumonia [10, 11], bacteremia [12] and soft tissue infection [13]. However, no further cases of FG were reported in the literature.

FG is a urologic emergency that necessitates immediate identification, forceful hemodynamic stabilization, parenteral broad-spectrum antibiotic therapy, and surgical debridement. Since this disease has a high mortality rate, a high index of suspicion is required for early detection if a patient appears with scrotal pain and oedema [15]. The presented case had pain in the right testicle for about a year and an ulcer appeared on the lower right end of the scrotum for the last month. It is interesting that the patient's symptoms have been present for almost one year. The absence of risk factors such as history of trauma, immunosuppression and chronic disease history has created confusion about the development of FG due to this agent in this patient.

Many studies have demonstrated that FG patients with poor outcomes include those who have diabetes, advanced age, low blood pressure, high creatine kinase, high lactate, abdominal pain, hemoglobin less than 10 g/dL, and platelet count less than 150×10^9/L [4, 16]. The underlying conditions such as heart disease, renal failure, obesity, long-term steroid treatment, smoking, and alcoholism or alcohol dependence are reported risk factors for FG [4]. Diabetes mellitus remains the main risk factor for FG, accounting for 43.7% of all FG patients, despite the fact that there are numerous other risk factors [16]. About 40% of FG patients had body mass indices higher than 30, according to a study by Czymek et al. [17], indicating that being overweight is also a risk factor for FG. The presented patient was 40 years old and had no diabetes or additional underlying disease. His blood pressure was normal. There was no abdominal pain on physical examination. Laboratory parameters did not show

high creatine kinase and high lactate values. In addition, haemoglobin and platelet counts were within normal reference limits. In addition, his body mass index was 23.8 = kg/m^2 and within normal limits and he had no history of smoking and alcohol addiction.

FG is a rare, fulminant, fast progressive subcutaneous infection of the scrotum and penis that can affect individuals of any age [15]. The presented case was 40 years old men.

The majority of cases feature a mixed synergistic infection of aerobic and anaerobic bacteria and develop because of one of three mechanisms: local trauma, extension from a perianal, periurethral, or ischiorectal infection, or a combination of the two [15]. *Escherichia coli* is the most often isolated pathogen (54%), and poly-microbial infection is the most frequent microbiology implicated with FG. *Streptococcal* infection, *Bacteroides*, *Enterobacter*, *Staphylococcus*, *Enterococcus*, *Pseudomonas*, *Corynebacterium*, and *Klebsiella pneumoniae* are other pathogens that can cause disease [17]. In the extracted cultures of the patient, *R. dentocariosa* was isolated alone and no polymicrobial growth was detected. In addition, histopathological examination of the extracted materials did not reveal any underlying findings such as tumour, chronic infection (e.g. tuberculosis). Histopathologic examination was consistent with bacterial infection with neutrophilic infiltration, necrosis, abscess, and chronic inflammation in the testis and scrotum.

He responded favourably to the treatment. Along with applying povidone-iodine topically, the usual wet dressing was applied. His wound was repaired using secondary suturing on the fifteenth postoperative day. On the 28th day following surgery, he was released. The patient was symptom-free when examined four weeks later. In the 1-month outpatient clinic follow-up, his complaints did not recur.

4. CONCLUSIONS

Different microorganisms can cause FG. Antibiotic treatment and debridement are life saving for this potentially fatal disease. Microbiologic cultures are essential for the regulation of antibiotic therapy.

5. CONFLICT OF INTERESTS

The authors have no conflict of interest to declare. The authors declared that this study has received no financial support.

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