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FOURNIER'S GANGRENE: PREDISPOSING FACTORS, EMERGENCY MANAGEMENT AND MORTALITY RATE

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Abstract: *Fournier's gangrene is a form of necrotizing fasciitis, an extremely aggressive and rapidly progressive polymicrobial soft tissue infection of the perineum and genitalia, which demands early recognition, aggressive treatment with antibiotics and surgical debridement, in order to reduce morbidity and mortality.*

Key words: *Fournier's gangrene, necrotizing fasciitis, diabetes mellitus of type II, debridement.*

1. Introduction

Fournier's gangrene is the sudden onset of fulminant gangrene of the external genitalia and perineum, first reported by Baurienne in 1764 [9] and then described by Jean Alfred Fournier, a French dermatologist and venereologist, in 1883, in a series of five cases with no apparent cause [3].

It primarily affects males (90% of cases), in an apparently healthy condition and there have been descriptions in women and even in children as young as 2 months [5], [6].

It is most common in older men (peak incidence in the 5th and 6th decades), but the incidence is rising, most likely due to It is reported like a rare condition, with an incidence of the disease of 1.6 cases per 100000 person-years, [7] although mortality is high (20%–30%, on average [10] according to recent series).

Predisposing factors in patients with Fournier's gangrene include: Diabetes mellitus (the most common), local trauma, paraphimosis, chronic alcoholism, malnutrition, obesity, liver cirrhosis and immunosuppression [7].

Low socioeconomic level has also been reported to be a predisposing factor [4].

The emergence of HIV into epidemic proportions has opened up a huge population at risk for developing Fournier's gangrene [2].

The source of infection is either cutaneous, urogenital or colorectal areas. Infection most commonly occurs from the skin, urethra or rectal regions.

Culture of infected tissue uncovers a mixed polymicrobial infection with gram-negative rods (Escherichia coli, Pseudomonas species, and Klebsiellaspecies), gram-positive cocci (b-hemolytic streptococci, Staphylococcus aureus, Enterococcus) and anaerobic organisms (Bacteroides, Clostridium, microaerophilic streptococci). The most commonly cultured are Escherichia coli, Bacteroides, beta-hemolytic streptococci, Staphylococcus spp., and Proteus.

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The essential treatment of Fournier's gangrene after an early recognition is the aggressive surgical debridement of necrotic tissues, irrigations and broad-spectrum antimicrobial therapy.

2. Objectives

To analyze the results retrieved in the Urology Clinic, General Emergency Hospital Brasov, from patients with Fournier's gangrene who were managed in our hospital.

3. Material and Methods

A retrospective review included 19 patients diagnosed with Fournier's gangrene in our hospitals from 2002 to 2012, in a period of 10 years.

Fournier's gangrene diagnosis was established on clinical features, laboratory and imaging tests.

The clinical data included age and sex, medical history (co-morbid, predisposing conditions), identification of causal agents, time to progression of gangrene, surgical procedures, antibiotic use, mortality and length of hospital stay.

After some preliminary investigations, patients started broad-spectrum antimicrobial therapy, nutritional and fluid support, and few hours later all of them were treated surgically, with aggressive excision of all non viable tissues under anesthesia.

4. Main Outcome Measures

Our main outcome parameter was mortality rate of our patients. As secondary outcome measures, identification of predisposing condition and what was the treatment they had in our clinic.

5. Results and Discussions

During a period of 10 years we analyzed a group of 19 patients, who showed necrotizing fasciitis that covered different areas of the body with varying proportions of necrosis. The area involved extended from genitals to the whole abdomen.

We found median age of the patients to be 62 years (range between 45 and 79 years), all of them men.

Ultrasound treatment has been made in emergency to all of them, but it did not prove any pathological elements.

The personal history revealed predominant predisposing factor diabetes mellitus of type II at eleven patients (57,8%), insulin-dependent or not – eight of them (72,7%) with oral treatment for diabetes mellitus type II and three of them (27,2%) in treatment with insulin, followed by obesity at nine patients (47,3%), arterial hypertension at eight patients (42,1%) and chronic alcoholism in four cases (21%).

None of the patients had a urinary catheter before diagnosis.

Affirmatively the lesions started about 2-4 days before going to the doctor, so the median time from the start of the symptoms and progression to gangrene was of 3 days. Fournier's gangrene usually begins with an insidious onset of pruritus and discomfort of the external genitalia.

Patients can present varying signs and symptoms, but usually at a first examination the general state is deeply modified: the patients have a suffering face, they are anxios, some of them have digestive disorders, they are nervous, with shiver and fever. The main reason for their presentation is pain which is out of proportion to the visual appearance of the infection.

Routine laboratory tests, blood and urine analysis were performed. Biochemical tests revealed a rise of leucocitis (hyperleukocytosis> 10.000/mm3) to eleven pacients (57,8%) and moderate anemia to seven patients (36,8%).

During the examination of the patients we found a source of infection in the perianal area, on the genitalia and on the perineal skin.

The most common site of infection origin was the scrotum at twelve patients (63,1%), and seven (36,9%) patients had the source of infection in perianal area or on the perineal skin.

Fig.1. *Preoperative aspect of a pacient*

Due to the grave and fulminating evolution of the patients, the surgical operation to all of them (100%) has been decided, after 2 or 3 hours of coming, under intravenous sedoanalgezia combined with local anesthesia.

Fig. 2. *Preoperative pacient preparation*

We made excision of the necrotic tissue, debridement, irrigations and due to the fact that the area involved extended to the whole abdomen at two pacients (10,5%), we decided to make multiple incisions at the level of the abdomen wall and after that we placed suprapubiccystostomy.

Fig.3. *Intraoperative aspect to a pacient, at the end of the intervention*

Fig.4. *Postoperative aspect of another pacient after aggressive debridement*

Out of the total number of patients treated, two of the patients (15.7%) died, even with early diagnosis, aggressive surgical and antibiotic treatment, while seventeen (89.4%) patients recovered completely and they left the hospital after the secondary suture of the incisions has been made.

According to laboratory tests sixteen (84.2%) patients had positive cultures, ten (62.5%) pacients hadpolymicrobial infection and six (37.5%) pacients had a monomicrobial infection. The most commonly isolated microorganism was Escherichia coli isolated at eleven (68,7%) patients.

All patients received routine empirical antibiotic treatment with gentamicin (160 mg/d), ceftriaxone (2 g/d) and metronidazole (500 mg/8 h). Average length of hospital stay was overall 27 days.

6. Conclusions

It is important to recognize Fournier's gangrene in the early stages, when cutaneous manifestations are minimal and the multimodal approach, which includes haemodynamic stabilisation, aggressive surgical debridement and broad-spectrum antibiotic therapy is the key of a good tratament of Fournier's gangrene.

The mean age of our study population coincides with other studies, we didn't have female patients with necrotizing fasciitis. Concerning laboratory and clinical findings, elevated heart and respiratory rates, rise of leucocitis, and anemia were associated with a bad evolution.

Like many other authors we found that the predominant predisposing factor diabetes mellitus of type II and other predisposing factors are variable.

We found infected tissue with mixed polymicrobial infection with gram-negative rods and the most met isolated microorganism was Escherichia coli.

The treatment applied is similar or the same with other studies: emergency debridement and irrigation under anesthesia, with good postoperative results and remarkable decline in deaths, as the tendency to spread was very high, and if it would have been left untreated, it would have lead to death [1].

The average hospital stay in our study conforms with the results of many similar studies, the seriousness of the injuries is associated with longer hospital stay.

Overal mortality rate was 15.7%, a value close to other publications. [8]

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