Reconstruction of scrotum in Fournier`s gangrene

Dr. Sabah Hassan Naji Specialist plastic and reconstructive surgeon
Ministry of health, AL-Kindi teaching hospital, Baghdad, Iraq.

الخلاصة:

مرض موات فورنير من الأنواع النادرة والخطرة جداً والذي يصيب كيس الصفن والذي يحدث مصاحب للالتهابات البكتيرية، وتكون الفترة الزمنية لبداية المرض سريعة ومتفاقمة جداً.

ان التشخيص والعلاج المبكر يعتبر ضروري جداً لمنع الوفاة والذي يشتمل على استئصال وتصريف جميع الأنسجة الميتة مع استخدام المضادات الحيوية ومن ثم تقويم المنطقة المصابة.

في هذه الدراسة تم الاعتماد على عشرة مرضى مصابين بمرض موات فورنير في كل من مستشفى مدينة الطب التعليمي ومستشفى الواسطي التعليمي ومستشفى الكاظمية التعليمي، في كل من أقسام الجراحة التقويمية وقسم الجراحة البولية وباستخدام ثلاث عمليات تقويمية مختلفة لكيس الصفن. ولوحظ ان الطريقة المثلى هي عملية الخياطة الثانوية المباشرة مقارنة بالطرق الأخرى والتي تشتمل على الترقيع الجلدي وعمل سدلة لتقويم المنطقة المصابة.

هدف البحث هو لتقييم أن التشخيص والعلاج المبكر ضروري لتقليل نسبة الوفيات للحالات المصابة ولاستعراض مختلف أنواع العمليات التقويمية المتوفرة وإيجاد الطريقة الأمثل والأكثر سهولة مقارنةً بالطرق الأخرى.

ABSTRACT

Background: Fournier`s gangrene is a rare but a serious form of scrotal gangrene secondary to a synergistic bacterial infection .It is a life threatening condition if not well managed.

Objectives: our study is to evaluate that early diagnosis and treatment will reduce the mortality rate and to review the different types of surgical reconstructive procedures of the scrotum and which is the preferable method**.**

Methods: a prospective study was done on ten patients with Fournier`s gangrene and we evaluated them according to their age, etiology, prodromal period and predisposing factors, type of surgical reconstruction of scrotum and post operative complications.

Results: Our study shows the youngest age was 35 years old, 80% had identifiable risk factors, 80%had polymicrobial infection, and 60% of patients secondary suturing of scrotum was performed.

Conclusion: Fournier`s gangrene is a serious disease which needs early diagnosis and treatment. Direct secondary suturing of scrotal defect is the best method of reconstruction.

Keywords: Fournier`s gangrene, Reconstruction of scrotum.

INTRODUCTION

Fournier`s gangrene can be defined as an unexplained synergistic gangrene ”Fulminate necrotizing fasciitis" of scrotum and perineum occurring without appearing cause but often with an infective etiology(1). Jean-Al-Fried Fournier 1832-1914 French veneriologist described this gangrene as three common factors (2) as: Idiopathic nature, abrupt onset:- a previously healthy patient and rapid progression to frank gangrene. Although it originally described as idiopathic gangrene of the genitalia, about 90% has an identifiable cause as morbid obesity,cirrhosis,immune suppression(3).The incidence of Fournier’s gangrene about 1/7500, of the patients, about 25% are alcohol abusers and 45% are diabetic (4).

PATIENTS AND METHOD

In our prospective study we evaluated a total number of 10 patient with Fournier`s gangrene, they were followed up for a period of 2-7months and evaluated for the criteria of age ,etiology ,predisposing factors, prodromal period, types of surgical reconstructive procedures(direct secondary suturing, split thickness skin grafting, and fasciocutaneous flap) and post-operative complications. Our management included good nutritional support, with immediate and radical surgical debridement, dressing changes (twice daily)was done with the use of hydrogen peroxide, betadin soaked dressing and local antibiotic. We also use systemic broad spectrum antibiotics (ampicillin 500mg four times a day I.V, garamycin 80mg three times a day I.V, and metronidazole 500mg three times a day, with subsequent change of systemic antibiotic according to the results of culture and sensitivity. Investigations was done as complete blood picture and Erythrocyte Sedimentation Rate , general urine examination, fasting blood sugar liver function test, blood urea, serum creatinine & chest x-ray. The use of sedation and antidepressant is required in acute stages. Urethral catheter was done and when the scrotal wound became clean and with healthy bed and the patient became hemodynamically stable surgical reconstruction of scrotum were done in which six patients direct secondary suturing of scrotum were done, one patient split thickness skin grafting taken from the thigh, in one patient direct secondary suturing of scrotum with cigar skin graft of the penis, in other patient posterior thigh fasciocutaneous flap was done.

RESULTS

Ten patients with Fournier's were evaluated, the youngest was 35 years old and the oldest was 65 years old,6 patients (60%) were in the age group of 41-50 years. Eight patients has an identifiable predisposing factors such as diabetes mellitus- peri - anal infection. The prodromal period range from 1-7 days, about 80 % our cases showed polymicrobial infection and 20 % get only one type of organism. The average period of hospitalization was 21 days, six patients (60%) stayed 20-30 days in hospital, in six patients reconstruction was done by direct secondary suturing of scrotum, one patient was reconstructed with direct secondary suturing with cigar graft of the penis, one patient in which reconstruction with posterior thigh fascio-cutaneous flap was done, and one patient died before surgical reconstruction. 70 % of our cases had no post operative complication, 30% get complications as wound infection and death from septicemia.

Table no. (1) Etiology

Etiological factor	No. of patients	Percentage
Diabetes mellitus	5	50
Alcohol abuse	4	40
Paraplegia	1	10
Renal failure	1	10
Peri - anal infection	3	30
Local trauma	3	30
No identifiable	2	20

Table no. (2) Types of organisms Isolated

No. of organisms	No. of patients	Percentage
Pseudomonas aeruginosa	7	70
Klebsiella	5	50
Escherichia coli	4	40
Proteus mirabilis	2	20
Staphylococcus aureus	2	20

Table no. (3) Surgical procedures

Surgical procedures	No. of patients	%
Direct secondary suturing	6	60
Split thinness skin grafting	1	10
Direct secondary suturing of scrotum with cigar skin graft of penis	1	10
Posterior thigh fascio - cutaneous flap	1	10
Total	10	100

Table no. (4) Post-operative complications

Post-operative complications	No. of patients	%
Left inguinal abscess at the site of implantation of the testis	1	10
wound infection	1	10
Death due to septicaemia	1	10
No complication	7	70
Total	10	100

Table no. (5) Post-operative evaluation and follow up

Criteria	Direct secondary suturing	Skin grafting	Regional flap
Size of the scrotum	Reduced	Reduced	Bulky
Sensation of the scrotum	Normal (except in paraplegic patient)	Sub- normal	Disoriented sensation
Function of the scrotum	Normal	Altered	Altered
Satisfaction of the patient	Satisfied	Satisfied	Satisfied

Table no. 11 represented ten cases of Fourniers gangrene

Patient No.	Age years	Etiology predisposing	Associated condition	Prodromal period (days)	Days in hospital	Types of organisms isolated from culture	Types of surgical procedures	Postoperative complication
1	40	Peri -anal fistula	Paraplegia with neurogenic bladder and chronic renal failure.	3	25	*Pseudomonas aeruginousa. *Escherichia coli. *Proteus mirabilis.	* Debridement. *Direct Secondary Suturing with embedding of the left testis in the subcutaneous tissue of left thigh.	Left inguinal abscess at the site of embedding of the left testis.
2	45	Peri-anal abscess	Alcohol abuse	7	22	*Escherichia coli. *Pseudomonas aeruginosa.	*Debridement. *Posterior thigh fascio - cutaneous flap.	
3	35	Itching with scratching of the scrotum.	********	4	28	Klebsiella species	*Debridement. *Another Debridement few days later. *Skin graft.	
4	45	Local trauma by insertion of penile prosthesis	Diabetes mellitus alcohol abuse	3	30	*Proteus mirabilis. *Staphylococcus aureus. *Pseudomonas aeruginosa.	*Debridement *Direct secondary suturing of the scrotum	
5	47	Local trauma with repeated urethral catheterization	Paraplegia due to bullet injury	2	36	*Escherichia coli *Klebsiella species	*Debridement. *Another Debridement 1 week later *direct secondary suturing of the scrotum.	Postoperative wound infection
6	43	*********	********	2	22	Pseudomonas aeruginosa	*Debridement. *Direct Secondary Suturing by the use tension sutures *Split thickness Skin grafting cigar graft of the penis.	
7	42	Irritation with scratching of the scrotum	DIABETES MELLITUS ALCHOHOL ABUSE	1	23	*Pseudomdnas aeruginousa *Klebsiella species *Staphylococcus	*Debridement. *Direct Secondary suturing of the scrotum Skin graft	

8	52	*********	Diabetes mellitue	3	11	*pseudomonas aeruginosa. *Proteus mirabilis.	*debridement. *Direct secondary suturing of the scrotum.	
9	50	perinal abscess	Diabetes mellitue	2	10	*escherichia coli. *Klebsiella species	*debridement. *Direct secondary suturing of the scrotum.	
10	65	perinal fistula	Alcohol	7	15	*Klebsiella species *Pseudomonas aeroginosa	*multiple debridement the patient died before surgery	Patient died from septicaemia

Discussion

Fournier's gangrene is a polymicrobial necrotizing fasciitis of scrotum, perineal and perianal area treated with extensive soft tissue debridement, with institution of broad spectrum antibiotic therapy which should cover gram positive , gram negative organism, anaerobes, hyperbaric oxygen if available has shown some promising results(3)(5).Surgical debridement often lead to loss of scrotal skin, multiple options for reconstruction of scrotum are available as direct secondary suturing or split thickness skin grafting with mesh grafting (6),or the use of superthine groin flap (7,8) and the use of tissue expander for extensive scrotal skin loss (9,10). Spontaneous healing of scrotal tissue defect should be avoided, because of abundant scar tissue formation which may produce immobilization of the testes (11).

In our study six patients direct secondary suturing of scrotum were performed, one patient with split thickness skin grafting, one patient with direct secondary suturing of scrotum with cigar graft of the penis and one patient reconstruction was done by posterior thigh fasciocutaneous flap. So In cases in which there is availability of scrotal skin Direct secondary suturing of the scrotal defect is the best method because it s the easiest procedure, with the least local scaring and with the most acceptable results, while when there is shortage in scrotal skin or the gangrene involves a Large area such as the whole penis or the perineum, skin grafting or a regional flap is indicated for reconstruction of the scrotum.

CONCLUSION

Fournier's gangrene is a severe necrotizing fasciitis of scrotum and perineum and it is a serious and life threatening if not well managed. Early recognition and aggressive surgical debridement under cover of broad spectrum antibiotics are recommended.

Direct secondary suturing of scrotum is the best method of reconstruction because it is the easiest, with less local scarring and with the most acceptable results, while when there is shortage in scrotal skin grafting or regional is indicated.

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