
Case Report

Necrotizing Fasciitis of the Anterior Abdominal Wall Following Myomectomy in an Obese Diabetic Patient: A Case Report

Iornum H. Shambe¹, Ismaila O. Bashiru², Kenneth N. Ozoilo³

¹Department of Obstetrics and Gynaecology, University of Jos

^{2,3}Department of Surgery, University of Jos

Corresponding Author: Dr. Iornum Shambe

Department of Obstetrics and Gynaecology University of Jos

Abstract: Necrotizing fasciitis is a progressive infection of fascia that is associated with necrosis of subcutaneous tissues. It has high morbidity and mortality rates because the diagnosis is often not made early enough to institute the aggressive treatment that is necessary to prevent death. We herein report a case of necrotizing fasciitis of the anterior abdominal wall following a myomectomy in an obese diabetic female that was diagnosed early enough to allow for a favorable outcome following aggressive antibiotic therapy and surgical debridement.

Keywords: Necrotizing fasciitis, Obesity, Diabetes

Introduction

Necrotizing fasciitis is also known by a variety of names including Meleney ulcer, hospital gangrene and synergistic necrotizing fasciitis.¹ It is a complication of a variety of surgical procedures and medical comorbidities but may be idiopathic. Bacteria implicated in the infective process that follows this condition may be aerobic, anaerobic or mixed.^{2,3}

The incidence of necrotizing fasciitis is thought to be on the increase in African countries because of the rise in the incidence in immunocompromised patients with HIV, cancers and diabetes mellitus, vascular insufficiencies and alcoholism amongst other comorbidities that favor its development.³

Case Report

A 41 year old Para 2+ 2 female who was a known diabetic and hypertensive diagnosed 16 and 12 years before presentation respectively presented at the gynaecological clinic with a 4 year history of menorrhagia and recurrent pregnancy losses. She had defaulted follow up at the Medical outpatient department where she had been on antihypertensives and hypoglycemic agents. She had a previous Cesarean section in her first confinement 15 years ago.

She was a middle aged woman that weighed 84kg and her height was 1.57metres. Her body mass index was 34kg/m². Her pulse rate was 88beats per minute, and the blood pressure was 110/80mmHg. She had anterior abdominal wall obesity with fat apron which made deep palpation difficult. There was a well healed Pfannenstiel scar. The uterus was 16-18 weeks size determined by a bimanual pelvic examination.

A diagnosis of uterine fibroids was made and confirmed by an

abdominopelvic ultrasound scan. She was worked up for a myomectomy while being co-managed with the medical team to control the hypertension and blood sugar. Her Packed cell volume was 32% preoperatively with a Fasting blood sugar of 6mmol/litre.

At surgery, multiple sub mucosal and intramural fibroids were removed. Post operatively, her glycaemic control was poor with the Fasting blood sugar ranging from 10-14mmol/litre. She was commenced on antibiotics, analgesics, insulin and subcutaneous Heparin. She subsequently developed surgical site infection with wound break down about 4 days post operatively and was placed on twice daily wound dressing with Hydrogen peroxide and Eusol. A wound swab cultured Streptococcus bacteria species.

She had secondary closure of the wound 27 days after the primary surgery. By the third after the closure the wound was noticed to be discharging purulent copious offensive discharge from the operation site, with blackish greyish discoloration of the anterior abdominal wall. She had pyrexia with a temperature of 38°C with two episodes of septic shock.

She was reviewed by the general surgeons and an assessment of synergistic gas gangrene was made. She was commenced on meropenem, metronidazole, subcutaneous humulin 70/30 ,32IU am and 16IU pm. She had debridement and was transfused three pints of blood. A second look wound exploration was done 48hours after. Her blood glucose control was good after the exploration and the wound was packed with moist gauze. Daily wound dressing with pure honey and anticoagulants, multivitamins and antihypertensives were given.

When healthy granulation tissue was observed, dressing was

reduced to alternate days and she was referred to the plastic surgeons. Closure of the wound was performed one month after the initial exploration and she was discharged home one week later, to the Surgical and medical outpatient departments.



Anterior abdominal wall Necrotizing fasciitis before debridement



Debridement in progress

DISCUSSION

Necrotizing fasciitis has been described using different names but Joseph Jones, a Confederate Army surgeon is credited with reporting it first during the American Civil war.⁴Fournier described a similar condition occurring in the groin and perineal regions in 1883 and lent his name to the condition in that anatomical region while Meleney reported 20 patients in China who suffered from necrotizing fasciitis caused by Haemolytic Streptococcus similar to the bacteria cultured in the reported case.^{5,6}Wilson first used the term necrotizing fasciitis without ascribing the infection to any bacterium.⁷

This clinical entity often displays a fatal course with Group B Haemolytic Streptococcus often being the major initiating organism with a preexisting morbidity such as diabetes or obesity as the underlying cause.⁸Necrotizing fasciitis is classified as Types 1 and 2.Type 1 is polymicrobial but type 2 is usually monomicrobial.⁹

More microorganisms have been implicated and this may not

be unconnected with abuse of antibiotics and development of resistant strains of bacteria. Other bacteria such as Escherichia coli, Bacteriodes species and Pseudomonas have also been implicated.^{10,11} Bacterial invasion results of vascular damage and necrosis of fascial planes, fat and the overlying skin.¹²

It has been estimated that 20-40% of patients with necrotizing fasciitis are diabetic and this complication develops following surgical conditions that cause local tissue damage and later bacterial invasion.¹³ In the presented case, the poor control of the patient's blood sugar was the likely predisposing factor along with obesity. The necrotizing fasciitis that followed in turn made the control of blood sugar more challenging. Other conditions that have been implicated include alcoholism, drug abuse and malnutrition.^{14,15} The mortality rates in necrotizing fasciitis are high and range from 20-80% depending on pathogens, site of infection and speed of treatment.^{16,17}

The patient presented had debridement and wound exploration within 72hours after signs and symptoms of wound infection and shock. This along with aggressive antibiotic therapy may have contributed to her survival. Reviews have shown the mean age of survivors to be 35 years and the mean age of non survivors to be 49 years. The patient presented was 41years of age. Increasing age appears to be associated with higher mortality.

A retrospective review by Cheng et al showed upper extremity necrotizing fasciitis to have a high mortality rate with 35% of patients dying. Those that died had an altered consciousness and respiratory distress at initial presentation. Early diagnosis and aggressive surgical treatment prior to the development of systemic toxic signs were noted to be essential for survival.¹⁸ The extensive debridement ,antibiotic therapy ,blood transfusion and attention to glycaemic control is likely to have improved circulation and tissue oxygenation aiding the ability to fight infection thereby improving the final outcome.

CONCLUSION

Necrotizing fasciitis often takes a fulminant course with high mortality rates and morbidities. Early diagnosis, identification and management of comorbidities, antibiotic therapy and wound debridement can halt the course of this condition.

Declaration of patient consent

The authors declare that the patient in the case reported provided consent for her clinical information and images to be used in this publication on the condition that her anonymity would be maintained.

Financial support/sponsorship: None

Conflict of interest: There are no conflicts of interest

REFERENCES

- [1] Misiakos EP, Bagias G, Patapis P, Sotiropoulos D, Kanavidis P, Machairas A. Current concepts in the management of necrotizing fasciitis. *Front Surg*. 2014.

- 1:36.
- [2] Hakkarainen TW, Kopari NM, Pham TN, Evans HL. Necrotizing soft tissue infections: review and current concepts in treatment, systems of care, and outcomes. *Curr Probl Surg*. 2014 Aug. 51 (8):344-62.
- [3] Federman DG, Kravetz JD, Kirsner RS. Necrotizing fasciitis and cardiac catheterization. *Cutis*. 2004 Jan. 73(1):49-52.
- [4] . Quirk WF Jr, Sternbach G. Joseph Jones: infection with flesh eating bacteria. *J Emerg Med*. 1996 Nov-Dec. 14(6):747-53.
- [5] Fournier A. Gangrene foudroyante de la verge. *Semaine Med*. 1883. 3:345.
- [6] Meleney FL. Hemolytic streptococcus gangrene. *Arch Surg*. 1924. 9:317-364.
- [7] Wilson B. Necrotizing fasciitis. *Am Surg*. 1952 Apr. 18(4):416-31.
- [8] Bahebeck J, Sobgui E, Loic F, Nonga BN, Mbanya JC, Sosso M. Limb-threatening and life-threatening diabetic extremities: clinical patterns and outcomes in 56 patients. *J Foot Ankle Surg*. 2010 Jan-Feb. 49(1):43-6.
- [9] Cheng NC, Yu YC, Tai HC, Hsueh PR, Chang SC, Lai SY, et al. Recent trend of necrotizing fasciitis in Taiwan: Focus on monomicrobial *Klebsiella pneumoniae* necrotizing fasciitis. *Clin Infect Dis* 2012; 55:930-9.
- [10] Miller LG, Perdreau-Remington F, Rieg G, Mehdi S, Perlroth J, Bayer AS, et al. Necrotizing fasciitis caused by community - associated methicillin - resistant *Staphylococcus aureus* in Los Angeles. *N Engl J Med* 2005; 352:1445-53.
- [11] Ndukwe KC, Fatusi OA, Ugboko VI. Craniocervical necrotizing fasciitis in Ile-Ife, Nigeria. *Br J Oral Maxillofac Surg* 2002; 40:64-7.
- [12] Abramo A, Ferri E, Spinato G, Tirelli G. Necrotizing fasciitis of the posterior cervical compartment: An atypical case due to *Streptococcus agalactiae*. *Otolaryngol Online J* 2012; 2:4.
- [13] McMahon J, Lowe T, Koppel DA. Necrotizing soft tissue infections of the head and neck: Case reports and literature review. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2003; 95:30-7.
- [14] Adigun IA, Abdurrahman LO. Necrotizing fasciitis in a plastic surgery unit: A report of ten patients from Ilorin. *Niger J Surg Res* 2004; 6:1-2.
- [15] Camino Junior R, Naclerio-Homem MG, Cabral LM, Luz JG. Cervical necrotizing fasciitis of odontogenic origin in a diabetic patient complicated by substance abuse. *Braz Dent J* 2014; 25:69-72.
- [16] McHenry CR, Piotrowski JJ, Petrinic D, Malangoni MA. Determinants of mortality for necrotizing soft-tissue infections. *Ann Surg*. 1995 May. 221(5):558-63.
- [17] Simsek Celik A, Erdem H, Guzey D, et al. Fournier's gangrene: series of twenty patients. *Eur Surg Res*. 2011. 46(2):82-6.
- [18] Cheng NC, Su YM, Kuo YS, Tai HC, Tang YB. Factors affecting the mortality of necrotizing fasciitis involving the upper extremities. *Surg Today*. 2008. 38(12):1108-13.