

Impact of immunodeficiency virus (HIV) on Fournier's gangrene: observations in Zambia

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Key words: Fournier's gangrene; Human Immunodeficiency Virus (HIV); Incidence; Prognosis; Africa

The results of a prospective study in the University Teaching Hospital, Lusaka, Zambia, on the impact of Human Immunodeficiency Virus on the incidence and prognosis of Fournier's gangrene is presented; Zambia has been in the grip of an HIV epidemic since the early 1980s. A total of 10 patients with an average age of 32 years was observed during a 14-month period (March 1992–April 1993); eight patients had associated HIV infection. A contributory factor to the development of Fournier's gangrene was also present in seven patients, of which six involved the urinary tract. All patients were managed by early surgical débridement under antibiotic cover. Two patients died, only one of whom had associated HIV disease. This study has recorded a significant rise in the prevalence of Fournier's gangrene in Zambia since the advent of the HIV epidemic. It has also been documented that provided aggressive treatment along established lines is initiated without delay, the coexisting HIV infection does not adversely affect the prognosis of Fournier's gangrene.

Fournier's gangrene is a polymicrobial synergistic necrotising infection of the male genital subcutaneous tissue leading to gangrene of the overlying skin (1). It is essentially a necrotising fasciitis limited to the penoscrotal region. Despite Fournier's original emphasis on the idiopathic nature of the disease (2), a predisposing factor

has subsequently been noted in over 90% of the reported cases (3). The causal association of this relatively uncommon disorder with diabetes and conditions leading to immunosuppression is widely accepted (4,5). The increased propensity of opportunistic microbial infection in patients with HIV disease is well documented (6,7). It would thus seem logical to suggest that patients harbouring an HIV infection would be more prone to developing Fournier's gangrene than the non-infected population. The exact incidence of this association, however, remains unclear and the literature on the subject is sparse.

Zambia, a sub-Saharan East African country, has been in the grip of an HIV epidemic since the early 1980s. During the late 1980s it became apparent that a progressively increasing number of patients with Fournier's gangrene were being admitted to the surgical wards of the University Teaching Hospital, a national referral centre located in the capital city of Lusaka. Analysis of past hospital records documented a total of six cases during a 5-year period (1976–1980). A prospective study was therefore undertaken with a view to assessing the impact of the ongoing HIV epidemic on the prevalence of Fournier's gangrene in Zambia. An attempt has also been made to evaluate the best method of managing this condition in the HIV-infected population.

Patients and methods

During a 14-month period (March 1992–April 1993), 10 indigenous Zambians with Fournier's gangrene were

Table 1. Clinical data and outcome of 10 patients

No	Age	Predisposing factor	Extent of involvement	Number of debridements	Other procedures	HIV serology (clinical stage)	Initial hospital stay (days)	Outcome
1	34 years	Urethral stricture	Scrotum	3	Suprapubic cystostomy	Positive (2)	21	Recovered
2	80 years	Urethral stricture	Scrotum and perineum	1	Suprapubic cystostomy	Negative	2	Died
3	32 years	Nil	Scrotum and penis	1	Skin graft of penis	Positive (3)	10	Recovered
4	1 month	Phimosis	Scrotum	1	Prepuceal stretching	Positive (1)	20	Recovered
5	35 years	Stricture	Scrotum	3	Suprapubic cystostomy	Positive (2)	30	Recovered
6	36 years	Stricture	Scrotum	1	Suprapubic cystostomy	Positive (1)	10	Recovered
7	3 weeks	Nil	Scrotum	1	None	Positive (1)	14	Recovered
8	20 years	Perianal abscess	Perineum and scrotum	1	None	Negative	30	Recovered
9	47 years	Stricture	Scrotum and penis	2	Suprapubic cystostomy. Skin graft of penis. Implantation of testes in thigh pouch	Positive (2)	70	Died
10	37 years	Nil	Scrotum and penis	1	Skin graft of penis. Implantation of testes in thigh pouch	Positive (4)	27	Died

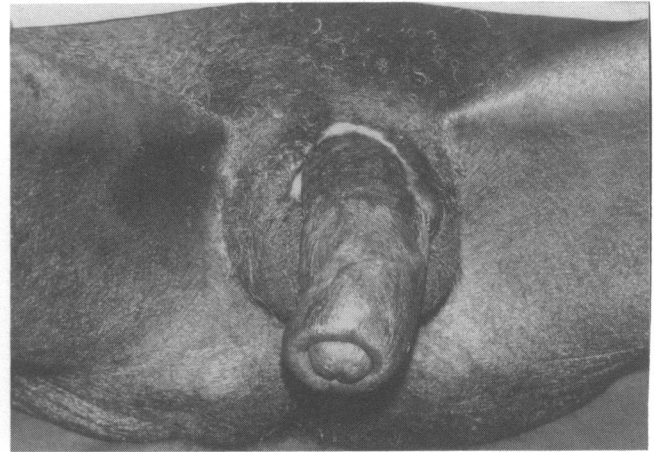
managed jointly by a urologist and a general surgeon in a surgical ward of the University Teaching Hospital, Lusaka. After hospitalisation, a detailed history with special emphasis on the mode of onset, general condition of the patient before the onset of the present disorder and the presence of any urological or anorectal disorders was obtained. In addition to the local appearance, physical examination was directed towards detecting clinical signs of associated HIV infection and features of immunodepression. HIV serology was performed in all cases. Owing to an almost total disruption in the laboratory services during the study period it was possible to perform only Hb, blood sugar and culture of pus on a limited number of patients. The facility of CD4 count is not available in Zambia; the stage of the HIV disease in the seropositive group was determined on clinical grounds according to the proposed WHO staging system (7). After adequate resuscitation, surgical débridement was performed in all patients along with suprapubic urinary diversions in those with urethral strictures. All patients were started on a triple antibiotic regimen preoperatively, usually consisting of gentamicin, metronidazole and penicillin. The patients were kept under close observation and débridement repeated when indicated without delay.

Results

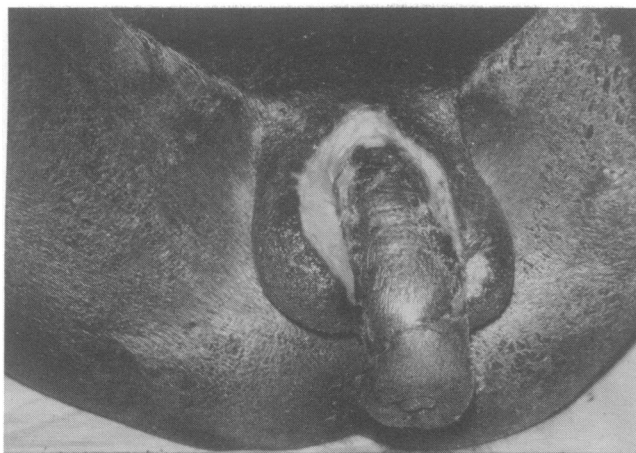
During the 14-month period a total of 10 patients with Fournier's gangrene of widely differing age was encountered; the ages ranged from 3 weeks to 80 years (average 32 years). The clinical data of these ten patients and their HIV status are detailed in the Table 1. Almost all patients were clinically toxic; the 80-year-old having had a urethral dilatation 3 days previously demonstrated clinical features of Gram-negative septicaemia. All patients presented with fully developed Fournier's gangrene; the duration of the prodromal period could not be determined with certainty in any. Eight patients also had associated pathologies (Table 1) which were considered contributory to the development of Fournier's gangrene. Eight patients (80%), including the mothers of the two seropositive infants, had positive HIV serology. Blood sugar tests performed on three adults were within normal limits; none of the patients had glycosuria. Culture of pus was possible in two patients and both demonstrated a mixed growth of *E coli*, *Pseudomonas* and Gram-positive cocci. Four patients required repeat débridement and three needed skin grafting of the penile shaft (Fig. 1). In the two patients with total loss of scrotal skin (Fig. 2) the testes were implanted in a subcutaneous thigh pouch. The average hospital stay was 28 days. Two patients died; the seronegative 80-year-old clinically septicaemic, died within 12 h of débridement and the other, a 37-year-old with advanced HIV disease died 27 days after admission with symptoms suggestive of HIV-related encephalitis.



(a)



(c)



(b)

Figure 1. (a) Appearance after débridement in a seropositive patient; strip of scrotal skin is preserved ventrally. (b) Extent of regeneration of the scrotal skin 5 weeks after débridement. Patient needed penile skin graft. (c) At 5 weeks after initial presentation.

Discussion

The impact of HIV infection on the incidence of Fournier's gangrene remains unclear; there is only one report of this disorder in a patient with HIV disease (8). However, there is hardly any doubt that the prevalence of this disorder has undergone a significant increase in Zambia since the advent of the HIV epidemic. Compared with about one case per year during the pre-HIV era, the present 10 cases were observed in a single surgical ward in only 14 months. One would thus be inclined to readily attribute this rise in Fournier's gangrene to the ongoing HIV epidemic. The fact that 80% of these patients were HIV positive provides credence to such an assertion. Seropositivity of this magnitude was not previously recorded in any single group of urology patients in Zambia; the previous highest seropositivity in this institution was 46% in patients with urethral strictures. Obviously, mere presence of HIV infection in these patients does not establish a causal link of the virus in this gangrene; it is the degree of associated immunodepression which should be the most important determinant. It is true that CD4 count, the gold standard of immunity status, was not performed in our study population; immunodeficiency including CD4 depletion, however, is

known to commence in patients belonging to stage 2 of the WHO staging system. Five of our patients would certainly have been in varying stages of immunodepression; this should constitute supportive evidence of a causal contribution of the virus in the genesis of Fournier's gangrene in some of our patients. The significance of positive HIV serology in the two infants merits further discussion. A positive HIV serology is known to occur in a neonate as a result of passive antenatal transfer of antibodies from an infected mother and is not always indicative of an active infection. A detectable antibody titre in such a situation persists for up to 15 months (9); unfortunately, further follow-up proved impossible in both of these children. Fournier's gangrene in neonates appears to be exceedingly rare; we were unable to find even a single report of this disorder in this age group in the English literature. While the significance of positive serology in these infants remains a matter of conjecture, it appears to be a strange coincidence that two cases of a hitherto unknown disorder were encountered during such a short time and both with positive HIV serology. No significant difference in the gross appearance of the lesions between the HIV positive and HIV negative patients was observed, except probably a tendency of the infective process to spread beyond the confines of the scrotum in



Figure 2. One of the two patients whose testes were placed in a medial thigh pouch.

the former group; all patients with penile involvement in this series had positive HIV serology. Probably the most significant finding to emerge from this study is the fact

that associated HIV infection did not appear to affect the prognosis of Fournier's gangrene adversely. Our observations clearly indicate that with early aggressive treatment along established lines, the HIV infected patients with this disorder are likely to fare as well as the HIV negatives. The two deaths in our patients are well within the mortality reported in the literature (3,5,10). Of the two deaths, only one was HIV positive and his death also was not a direct result of Fournier's gangrene.

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Received 24 October 1994