

Chronic wounds at QECH

O O Komolafe, C B Mangani

Chronic wounds are wounds that do not heal in a timely fashion. They can be debilitating, with complications that may lead to disability and/or death. In recent years, the extensive use and misuse of antibiotics has led to antibiotic resistance among bacteria, making the control of infections difficult. Infections caused by multidrug-resistant organisms such as *Mycobacterium tuberculosis*, *Streptococcus pneumoniae* and *Neisseria gonorrhoeae* are costing much money and many lives, in addition to reduced productivity by the afflicted.¹

At the Queen Elizabeth Central Hospital, Blantyre, an average of 18,000 patients consult the hospital for wound dressing annually, most of them for only a few days, weeks or months while some others have been consulting intermittently for years. This study was carried out to determine the bacterial profile and drug sensitivities of isolates from chronic wounds, in addition to defining the demographic characteristics of such wounds presenting at the QECH.

Materials and methods

Eighty-three outpatients who presented with chronic wounds at the QECH, Blantyre between November 1999 and May 2000 were enrolled in the study. A pre-tested protocol was used to collect data on demographic characteristics which included patients age, sex, cause, site and duration of wound, history of diabetes and antibiotics use. For the purpose of this study, wounds of 4-week duration and longer were classified as chronic.

Wound swabs were taken aseptically and subjected to Gram-staining and culture. Bacterial isolation, identification and antibiotic susceptibility tests were carried out as earlier described². Antiseptics, Ceflon and Eusol, routinely used in wound dressing at QECH were not included in the test. Urine specimens were collected from all patients and tested for glucose using the commercially prepared urine dipsticks (Promex Diagnostics).

Results

Eighty-three (83) chronic wounds swabbed from 51 (61.4%) males and 32 (38.6%) females were studied. Age range was 7 months to 68 years while median and mean ages were 27 and 29.7 years respectively. Population standard deviation was 16.2 years while the sample standard deviation was 16.3 years.

Swabs from 69 patients grew organisms giving a culture growth rate of 83%, while the remaining 14 (17%) specimens appeared "sterile" even on repeated culture. Through oral interviews, 71 (85%) of the patients admitted self-medication with antibiotics while 57 (69%) had either used a local concoction or consulted a sing'anga before presenting at the hospital. Patients within the 16-30 years age group predominated (37%) while 57% were

within the 16 to 45 years age bracket. Most patients (56%) could not specifically remember the cause of their wounds, but other causes included trauma (11%), burn (10%), ulceration (10%), swelling/tumor (8%) and surgery (5%).

While the lower limb accounted for 52 (63%) of the wounds, only 9(11%) were found on the upper limb, head and neck 4(5%), breast/chest 9(11%), trunk 6(7%) and genitals 4(5%). The duration of wounds encountered in this study ranged from 4 weeks to 30 years. About half of them (51%) were between one to two months' duration while 71% were below 4 months'. Two wounds, said to be on and off, were 28 and 30 years old. One hundred and three (103) bacterial isolates were recovered from 69 swabs of which 53 (51%) were Gram-negative bacilli and 40 (39%) Gram-positive cocci. Four isolates (4%) were acid-alcohol fast bacilli (AAFB) positive and 5 (5%) were yeast cells. No particular organism predominated although *P. aeruginosa* was the most common organism isolated (20%), while a combination of *Staphylococcus aureus* and *Staphylococcus epidermidis* accounted for 28% of all the isolates. Of the 4 AAFB positive organisms, one was identified as *Nocardia asteroides*, and the remaining 3 were *Mycobacterium* species.

Although antibiotic susceptibility tests showed that *E. coli* was moderately susceptible to ceftriaxone (80%), and chloramphenicol (67%) and *Strept. pyogenes* to gentamicin (58%), other organisms especially *Staph aureus*, *Staph epidermidis*, *Klebsiella pneumoniae*, *P aeruginosa* and *Proteus mirabilis*, which together constituted 67(65%) of all the isolates, showed marked resistance to most drugs used in the test (Table I). Similarly, penicillin, ampicillin, erythromycin and co-trimoxazole showed a broad-spectrum ineffectiveness against all isolates. The AAFB positive organisms and yeast cells were not included in the test.

There was no history of diabetes in any of the 83 patients although some (19, or 23%) had traces of glucose in their urine.

Discussion

Wound healing is an absolute prerequisite for survival. Without it the body will succumb to haemorrhage and/or infection. It is no surprise therefore that wound healing practices have been recorded from the time of the Smith Papyrus in 1700 BC.³ Before treating a wound, it is essential to determine the underlying cause, define its demographic features and consider other patient factors which may delay wound healing. Several factors both intrinsic (patients health and nutritional status, age, etc) and extrinsic (mechanical and chemical stress, debris, clinical infections and antimicrobial resistance to drugs) have been associated with delay in wound healing.³ The primary focus of this study therefore was to determine the bacterial profile including antibiotic susceptibility/ resistance patterns of chronic wound infections in relation to wound management practices at the QECH. We also aimed to describe the demographic characteristics of people presenting to the hospital with such wounds.

Eighty-three patients (61% males, 39% females) with chronic wounds ranging in duration from 4 weeks to 30 years presented within the study period. The fact that 71(85%) admitted self medication with antibiotics and 57(69%) had used local concoctions before presenting to the hospital suggested a considerable time-lag between injury and health-seeking behaviour of the patients. This delay could be contributing to the development and perpetuation of chronic wounds/ulcers among outpatients at the hospital. With 71% of the wounds below 16 weeks, it is possible that some of them might not have become chronic if they had presented early to hospital. The HIV status of patients was not determined in this study. 19(23%) patients had traces of glucose in their urine, suggesting that diabetes may have contributed to the chronicity of their wounds. Furthermore, apart from *E coli* with susceptibility to ceftriaxone (80%) and chloramphenicol (67%), and *Strept pyogenes* to gentamicin (58%) all other isolates exhibited a broad-spectrum drug resistance to almost all the antibiotics used in the test. Penicillin, ampicillin, erythromycin and cotrimoxazole showed profound ineffectiveness against virtually all the isolates. (Table I) This observation is not surprising considering the long duration of the wounds which has enabled the organisms to establish themselves, while self-medication probably created a selective pressure on the isolates to produce resistant strains⁵.

The practice of dressing all wounds with antiseptics (Ceflon and Eusol) at the QECH without recourse to the antibiotic susceptibility characteristics of the offending organisms may in fact be breeding populations of multidrug-resistant organisms thereby causing delay in wound healing. Although antiseptics may have a role to play in the topical management of heavily contaminated wounds they are often inappropriately used for long periods of time in chronic wounds with unpredictable outcome. As the need to sterilize a chronic wound/ulcer to achieve healing is still unproven³, there is

therefore little evidence to support the on-going routine use of antiseptics to achieve wound healing at the QECH.

Against this background coupled with the results of this study, chronic wound management at the QECH requires an overhauling to reflect current trends in management. For example, wounds that have not healed within 4 - 6 weeks should be referred to the laboratory for further investigation to ensure appropriate therapy and prevent resistant bacterial strains developing. Healing these chronic wounds/ulcers will significantly improve the quality of life of long-suffering patients, increase productivity in their various vocations as well as reducing the enormous burden on the health budget.

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O O Komolafe, C B Mangani

Department of Microbiology, College of Medicine, Private Bag 360, Chichiri, Blantyre 3

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Table I. Susceptibility pattern of bacterial isolates from chronic wounds to a panel of antibiotics

Antibiotic	<i>Staph. aureus</i> (n=18)	<i>Staph. epidermidis</i> (n=11)	<i>Strept. pyogenes</i> (n=12)	<i>E. coli</i> (n=15)	<i>Klebsiella pneumoniae</i> (n=8)	<i>Pseudomonas aeruginosa</i> (n=21)	<i>Proteus mirabilis</i> (n=9)
Penicillin	2(11)	1(9)	4(33)	1(7)	0	0	0
Chloramphenicol	5(28)	5(45)	3(25)	10(67)	2(25)	0	2(22)
Ampicillin	1(6)	0	2(17)	2(13)	0	1(5)	2(22)
Gentamycin	3(17)	1(9)	7(58)	5(33)	1(12)	2(9)	3(33)
Ceftriaxone	3(17)	0	2(17)	12(80)	2(25)	2(9)	5(56)
Erythromycin	0	0	5(41)	0	0	0	0
Co-trimoxazole	0	0	0	4(27)	0	0	2(22)

n = number of isolates
 Figures in table represent number susceptible
 Percentage susceptibility in parenthesis

Misuse of statistics: Torture numbers and they will confess anything