The Pattern of Diabetic Sepsis in Fiji

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Diabetes Mellitus, together with hypertension and cardio-vascular disease has now emerged as a major public health problem in Fiji.[1]

The diabetic is known to be at risk from complications of neuropathy, peripheral vascular disease and impaired wound healing. These complications impair circulation, diminish skin sensation and retard the healing processes. All these can lead to infection, ulceration, gangrene and loss of limb.

The economic cost associated with diabetes mellitus and its complications is enormous.[2]

The magnitude of the problem of diabetic sepsis in Fiji is unknown. The purpose of this paper is to project a pattern of diabetic sepsis in Fiji, on the basis of analysis of case records of 110 patients admitted to the Colonial War Memorial Hospital, Suva.

MATERIALS AND METHODS

A retrospective study of case records of 110 patients admitted, to the various wards of Colonial War Memorial Hospital, between January 1983 and January 1984 was carried out.

The Colonial War Memorial Hospital is the largest hospital in Fiji and is the teaching hospital for the Fiji School of Medicine. It is also the major referral hospital in Fiji. It provides care for a population of over 300,000. Those patients who were seen and treated on an out-patient basis (either at the General Out Patient Department or the Specialist Out Patient Clinics) were not included in the study.

RESULTS

1. ETHNIC DISTRIBUTION

Sixty-eight (62 percent) of all admissions for diabetic sepsis, were in Fijians, 36 percent in Indians and five percent in other ethnic groups. Almost half (49 percent), of all admissions, were female Fijian patients (Table 1). Admissions for all diseases in 1983, were equal for the two major ethnic groups.

2. AGE DISTRIBUTION

There were only three insulin-dependent diabetics (Type I); two Fijian sisters aged 17 and 19 years respectively and an Indian patient aged 23 years. All other patients had non-insulin dependent diabetes mellitus. None of the patients were thought to have malnutrition — related diabetes mellitus. The majority of patients were in their fifties (range 17-75 years) the mean age being 54 years. The mean age in various ethnic groups is shown in Table II.

Table I
ETHNIC DISTRIBUTION OF 110 PATIENTS WITH DIABETIC SEPSIS

	Diabetic Sepsis			
Ethnic group	**Males**	**Females**	**Total**	**Percentage**
FIJIAN	14	54	68	62
INDIAN	19	17	36	33
OTHERS	3	3	6	5
TOTAL	**36 (33%)**	**74 (67%)**	**110**	**100**

Table II
MEAN AGE OF 110 PATIENTS WITH DIABETIC SEPSIS

	Mean age (years)	
Ethnic group	**Males**	**Females**
FIJIAN	55	53
INDIAN	56	51
OTHERS	55	52

3. DURATION OF SYMPTOMS

In 107 patients the duration of sepsis, prior to admission, was available. It was found that generally there was a marked delay in patients seeking medical advice or treatment. One in four patients waited for over four weeks before they presented themselves for treatment (Table III). Reasons given for late presentations included: initial management of sepsis by traditional or folk medicine; delays in referral by some health centres and other difficulties such as transport costs etc.

Table III
DURATION OF SYMPTOMS BEFORE HOSPITALIZATION

	Duration		
	<2 weeks	2-4 weeks	>4 weeks
Number	39	43	25
Percentage	36	40	24

4. HISTORY OF DIABETES MELLITUS

Twenty two percent (24 cases) of patients presenting with diabetic sepsis were not aware that they had diabetes mellitus.

Eighty-six patients were known diabetics and had the disease for variable periods of time, ranging from few years to over 20 years. The majority of these patients were on diet and/or oral hypoglycaemic agents. Thirteen percent of patients were on insulin.

Family history of diabetes was recorded in 18% of the patients.

5. PREVIOUS ADMISSIONS FOR DIABETIC SEPSIS AND ASSOCIATED PROBLEMS

It was common for patients to have had previous admissions for diabetic sepsis. Sixty-two percent of patients had at least one previous admission for diabetic sepsis; 48 percent had multiple admissions for sepsis. There was one patient who had had eight previous admissions for diabetic sepsis. For his ninth admission in hospital he stayed for 100 days.

Thirteen patients with history of previous admission had had a major amputation done during one of those admissions.

Thirty-two patients were known hypertensives; eight gave a history of ischaemic heart disease; three patients had had cataract surgery and two patients were known cases of Hansen's disease.

6. DISTRIBUTION OF SEPTIC LESIONS

The distribution of the lesions was not different from experiences elsewhere in the world. The lower limb was the commonest site with the foot being involved in 67 percent of cases.

Unusual sites of diabetic sepsis included breast, orbit and one patient had extensive scalp cellulitis and necrosis (Table IV).

7. TYPES OF LESIONS

In the majority of the patient the sepsis was severe and advanced, and included large carbuncles, infected ulcers, deep tissue infections and gangrene (Table V). A number of patients had multiple lesions.

Table IV
DISTRIBUTION OF DIABETIC SEPSIS

SITE	NUMBER
Upper Limbs	7
Lower Limbs	83
(Foot)	(75)
Elsewhere	26

Table V
TYPES OF LESIONS IN 110 PATIENTS WITH DIABETIC SEPSIS

Type of Lesion	Number
Carbuncle	15
Ulcer	21
Infective/cellulitis	80
Gangrene	32

8. ASSOCIATED NEUROPATHY AND ANGIOPATHY

About half the patients (49 percent) were unaware of the mode of onset of sepsis. The rest could relate to a trauma or an initial event which progressed to sepsis. Nearly all patients had significant sensory neuropathy. Marked motor neuropathy (viz muscle wasting) was a common feature in the male Fijian diabetics. Assessment of large vessel disease was clinical and largely based on the presence or absence of ankle pulses. Macroangiopathy and other vascular complications were more frequent in the Indian diabetic patient. In contrast the Fijian patients had minimal angiopathy but instead had extensive sepsis.

9. BACTERIOLOGICAL FINDINGS

In 73 cases of diabetic sepsis, wound swab reports were available. No facilities existed at the CWM Hospital to do anaerobic culture and sensitivity during the study period. Hence the extent of anaerobic micro-organisms in the aetiology of diabetic sepsis cannot be determined.

Within a few weeks of being admitted in hospital, the diabetic wound was frequently colonised by pseudomonas and proteus mirabilis.

The common micro-organisms isolated are listed in Table VI.

10. AMPUTATION

Thirty-five patients (32 percent) required minor or major amputations to control the progress of sepsis and stabilise the diabetes mellitus. Major amputation (below knee or above knee) was necessary in 15 patients (14%).

Table VI
BACTERIOLOGICAL FINDINGS IN 73 CASES OF DIABETIC SEPSIS

Micro-organisms	Number
Staph. Aureus	21
B-Haemolytic Strep.	8
Proteus mirabilis	15
Pseudomonas aerogenes	15
Klebsiella	10
E. Coli	4

11. AVERAGE HOSPITAL STAY

The average inpatient stay was 29 days; the period ranging from seven days to more than 150 days. The longest stay in hospital by a patient with diabetic sepsis was 154 days.

12. MORTALITY

The case fatality in diabetic sepsis was high. Of the 110 cases reviewed, 13 patients died (case fatality rate of 12%). The cause of death recorded, in nearly all the cases was overwhelming sepsis associated with hyperglycaemia and diabetic coma.

DISCUSSION

Diabetic sepsis, usually severe and extensive is an important and common problem at the CWM Hospital and other hospitals in Fiji.[3 4 5 6 7]

There is a lack of realisation by the diabetic patient that a minor or trivial injury to the foot could result in loss of the limb. The delay by diabetic patients in seeking treatment for sepsis may be attributed to a lack of knowledge of foot care; a tendency to resort to traditional medicine and generally very poor control of blood sugar causing neuropathy. In some cases the initial treatment given at primary health care level was inadequate and the subsequent referral delayed.

Arterial disease and neuropathy are essential underlying causes of foot lesions in diabetics.[8] It is important to appeciate that sepsis is generally the overwhelming complicating factor in the Fijian patient. Angiopathy does not appear to be a major factor in the Fijian diabetic. The reverse is true for the Indian patients with diabetes mellitus.

In Fiji it is not unusual for diabetic patients to have repeated admissions for sepsis. The average duration of stay in hospital by these patients was 29 days, this is almost four times as long as other patients admitted to the CWM Hospital,[9] (the average stay for patients with any disease for 1983 was eight days.) The cost of care of these chronic cases must be very high. Diabetic sepsis is largely preventable. Yet for most patients control of diabetes and foot care becomes poor soon after they are discharged from hospital. This could be attributed to socio-economic factors, poor knowledge about diabetes and foot care, psychological factors, poor follow up and care, a lack of rehabilitation and support for those with disabilities.

SUMMARY

A retrospective study of 110 patients, admitted with diabetic sepsis, over a period of twelve months, was carried out.

The study shows a high frequency of diabetic sepsis, in the ethnic Fijians, especially in the females. There was an alarming tendency amongst the patients to delay seeking medical advice and hospital treatment for sepsis.

One in five patients with diabetic sepsis was an undetected diabetic.

Most patients had multiple hospital admissions for diabetic mellitus in the past.

Diabetic complications of angiopathy and neuropathy were seen but the associated sepsis was advanced and extensive particularly in Fijian patients.

The average stay in hospital by a diabetic patient with sepsis was four times as long compared to non diabetics. One third of the patients required amputations; half of these were major amputations. The overall case fatality rate was 12 percent.

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