Research Article

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Bacterial Survey of Diabetic Ulcers in Diabetic Patients in Hospitals at Aba, Nigeria

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ABSTRACT

Diabetic ulcers are usually seen as infected ulcers and run a chronic course. Selected documented records of diabetic patients with diabetic ulcers were taken from the laboratory sections of different hospitals and clinics in Aba. From these records, a total of 110 diabetic ulcer cases were used in this study irrespective of their sexes and ages. Trauma related ulcers were ruled out. Microscopy and culture of specimen or wound swabs from these ulcers after 48 hours at 360C incubation showed that the most common bacteria in these ulcers is *Escherichia Coli* (*E.coli*) followed by *staphylococcus* species which is 22%. These bacteria species were seen in most of these ulcers. This study showed that most diabetic ulcers are mostly or commonly infected by *Escherichia* species and *staphylococcus* species.

Keywords: Diabetic Ulcer; Patient; E.Coli; Bacteria

Introduction

Diabetes mellitus is one of the commonest diseases in tropical areas.Diabetesmellitusmaybedescribedasasyndromecharacterized by hyperglycemia and disturbance of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both [1]. Aside complications like diabetic nephropathy, neuropathy and retinopathy, diabetic ulcers are seen as the most troubling problem in the hospitals and clinics [2]. Most times, it involves the attention of both surgeon and internal physicians. It has been reported that diabetic complications are associated with overproduction of Reactive Oxygen Species (ROS) [3]. This complication is considered the leading cause of death among these patients. Oxidation plays a major role in diabetes [4]. The increase in free radical release accompanied by decrease in antioxidants is a major cause of diabetes [5]. In diabetes mellitus, there are usually alterations in the endogenous free radical scavenging defenses which leads to ineffective scavenging of reactive oxygen species resulting to oxidative damage [6]. Experimental diabetes induced by streptozotocin, selectively destroys the β-cells of pancreas by generating excess reactive oxygen species and produces kidney lesions that are similar to human diabetic nephropathy [7]. Studies have shown that individuals with diabetes have a higher incidence of kidney function abnormalities, as well as formation of free radical due to glucose oxidation, non-enzymatic glycosylation of proteins and subsequent oxidative degradation of glycated proteins, leading to a decline in antioxidant defense mechanism and damage of cellular organelles and enzymes and development of insulin resistance which ultimately, culminate in renal complications [8,9]. Thus, an early control of DM is recommended as one of main strategy to prevent these complications and increase the life span of these patients. Knowledge of the common pathogens associated with diabetic ulcers may hasten quick recovery of the patients as definitive therapy will be applied after confirmatory results of wound swab culture.

Materials and Methods

A retrospective study of confirmed 110 diabetic patients with diabetic ulcers managed in different hospitals and clinics at Aba over 9 months were taken from the laboratory sections of the hospitals and clinics irrespective of their sexes and ages. Trauma related ulcers were ruled out. Specimens or wound swabs from different ulcers were taken before commencement of treatment under sterile conditions for microscopy, culture and sensitivity (MSC) at 300cincubation for 48 hours. The results of these ulcer

and wound swabs were shown below. It should be noted that some of these patients had been on treatment either from patent medicine dealers or other clinics without records.

Ethical Consideration

Ethical approval was obtained from the State ministry of Health, Aba State; Nigeria. Consent from patient's from whom data's were obtained".

Result

Bacterial survey of diabetic ulcers in diabetic patients (Figure 1) and (Table1).

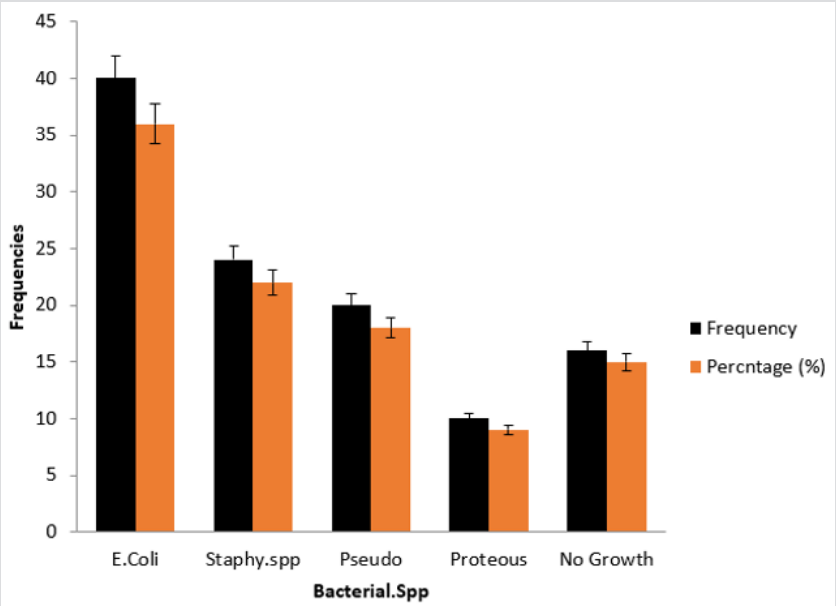

Figure 1: Bacterial survey of diabetic ulcers in diabetic patients.

Table 1.

Bacterial spp.	Frequency	Percentage (%)
Escherichia Coli (E coli)	40	36.0
Staphylococcus spp.	24	22.0
Pseudomonas spp.	20	18.0
Proteus spp.	10	9.0
No significant bacterial growth	16	15.0
Total	110	100

Discussion

Aside complications like diabetic nephropathy, diabetic ulcers are seen as the most troubling problem in the hospital and clinics [2].Thus early control is recommended as one of the main strategy to prevent these complications. Diabetic ulcer if not checked leads to the destruction of body tissues and impair patient's quality of life. Most diabetic ulcers can be prevented with good care and screening of people for risk factors [10]. It has also been implicated as one of the causes of Charot arthropathy [11,12], which involves progressive damage to the bones, joints and tissues of the body [12,13].

Therefore, the aim of this study was to carry out a bacterial survey of diabetic ulcers among diabetic patient in Aba, hospital in Abia State, Nigeria. Documented medical records of 110 confirmed diabetic patients admitted and managed in different hospitals and clinics at Aba were taken. Specimens or wound swabs were taken before commencement of treatment, though some patients would have being in several antibiotics without records. Our findings showed that Out of 110 diabetic patients with diabetic ulcers, specimens or wound swabs from these patients showed that 36.0% of cases were infected with *Escherichia coli*, 22.0% cases with *Staphylococcus spp*. This result also showed that 18.0% and 9.0% of cases were infected with *pseudomonas spp* and *proteus spp* respectively. Cultures of specimens or wound swabs of 15.0% of cases showed no significant growth. This indicated that these patients had being on several antibiotics in other places with no documentation or records.

Conclusion

In conclusion, our bacterial survey of diabetic ulcers in diabetic patients revealed that the most predominant bacterial in diabetic ulcers in our center is *Escherichia coli* (*E. coli*) followed by *Staphylococcus* spp. Therefore, the knowledge of this bacterial survey will be useful in management of diabetic ulcers.

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