Incidence of Bone Changes In Diabetic Foot

Thesis
Submitted for the Partial Fulfilment of the Degree of
Master in Internal Medicine

By
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M.B. B.Ch.

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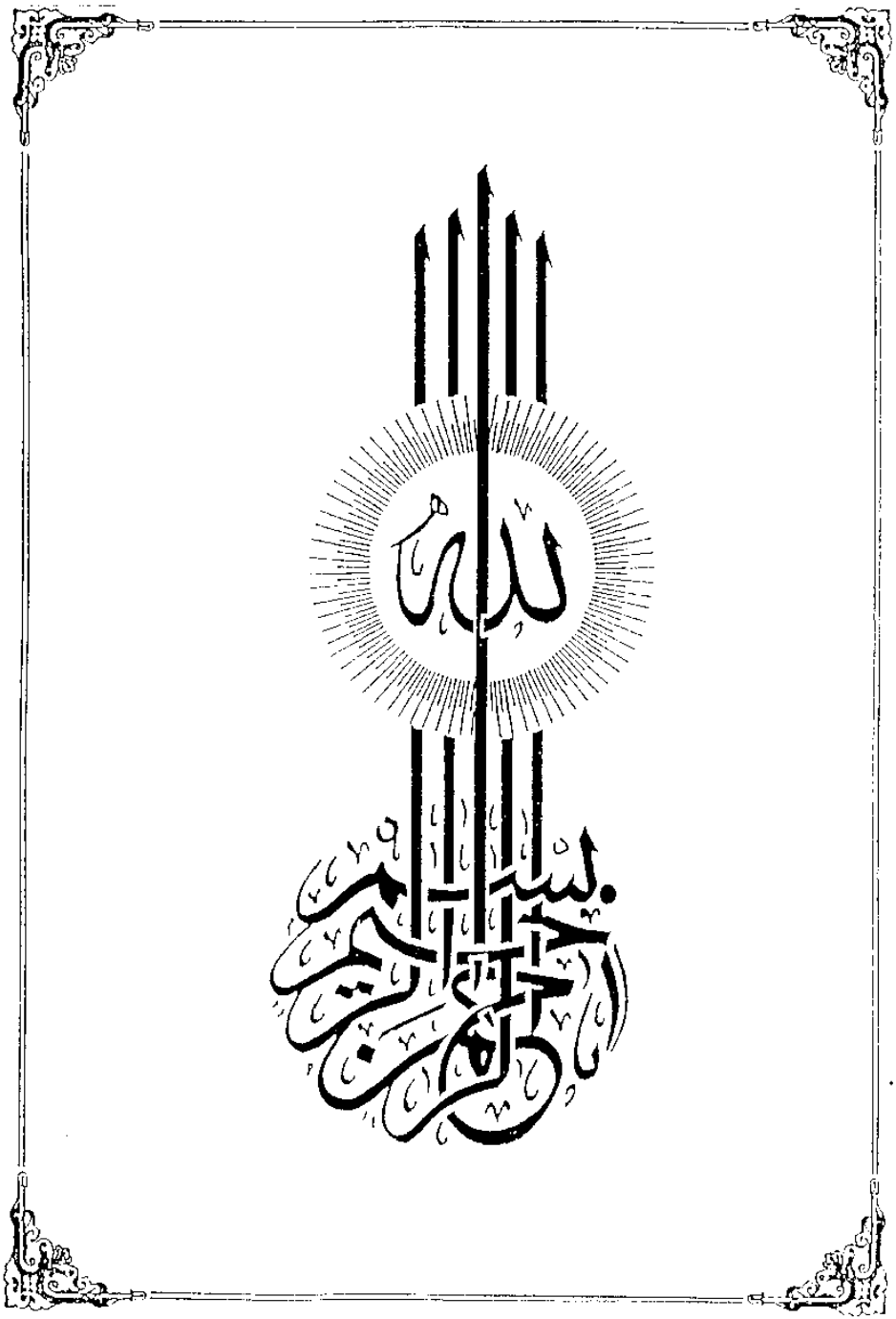
Faculty of Medicine
Ain Shams University
1994



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"سبحانك لا علم لنا إلا ما علمتنا
إنك أنت العليم الحكيم

صدق الله العظيم

سورة البقرة

آية (٣٢)

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INTRODUCTION

INTRODUCTION

Foot complications in diabetic patients are the most common causes of non traumatic amputation of lower extremities. Most lower extremity amputation, performed in diabetic patients for infection are preceded by foot ulcer. Foot ulcers serve as a portal of entry for osteomyelitis. Clinical judgment may be inadequate, as low grade osteomyelitis may underlie diabetic foot ulcers without the usual clinical manifestations of infection. The majority of diabetic foot ulcers have an underling osteomyelitis that is clinically unsuspected **[Newman et al., 1991]**.

Bone biopsy for diagnosis of osteomyelitis, is an invasive procedure and may be contraindicated in patients with diabetes. Nuclear imaging techniques in particular radio active isotope scanning are the potential tools to replace the need for bone biopsy in diagnosis of osteomyelitis **[Newman et al. 1991]**. Radio active isotope scan is highly sensitive and accurate for the diagnosis of osteomyelitis in diabetic foot ulcer **[Newman et al., 1992; and Anderson, 1989]**.

Aim Of Work:

The aim of this study is to determine both the prevalence and the clinical characteristics of osteomyelitis in diabetic foot ulcers, using radio active isotope scan.

REVIEW OF LITERATURE

Chapter I

Diabetes Mellitus:

Definition and Classification

- Type I: Insulin Dependent Diabetes Mellitus (IDDM)
- Type II: Non-Insulin Dependent Diabetes Mellitus (NIDDM)
- Malnutrition-Related Diabetes Mellitus
- Other Types of Diabetes

CHAPTER I

DIABETES MELLITUS

Definition and classification:

Diabetes mellitus is heterogenous primary disorder of carbohydrate metabolism with multiple etiologic factors that generally involve absolute or relative insulin deficiency or insulin resistance or both. All causes of diabetes ultimately lead to persistent hyperglycemia which is the hallmark of this disease syndrome, **[Olefsky, 1992]**.

Heterogenicity implies that there are differences among various groups of patients in term of etiology and pathogenesis (genetic, environmental and immune factors), in natural history and in response to treatment. Diabetes therefore is not a single disease but a syndrome**[Fajans et al., 1978]**.

In 1979 an international work group sponsored by the National Diabetes Data Group (NDDG) of the National Institute of Health published a classification of diabetes mellitus and other categories of glucose intolerance **[Harris and Cahill, 1979]**.

It was adopted and altered slightly by the World Health Organization (WHO). The following classification is based essentially on the NDDG and WHO work group with minor modifications **[Stefan, 1990]**, (see Table 1).

Table (1)
Classification of diabetes mellitus and other categories of glucose intolerance

Clinical classes	Subclasses	Stages in Natural History or Evolution (also see B, C, and Statistical Risk Classes A, B below)	Other information or Explanation
A. Diabetes mellitus (DM)			
I. Type I. Insulin dependent types (IDDM)	a. Type IA: Classical b. Type IB: Primary autoimune	1- Preketosis-prone a. Diabetic GIT b. Fasting hyperglycemia 2- Ketosis-prone. Insulin dependent a	Islet-cell antibody (IC A) positive Insulin autoantibody (IAA) positive.
II. Type II. Non-insulin-dependent types (NIDDM)	a. NIDDM in obese b. NIDDM in nonobese c. MODY-NIDDM inyoung plus autosomal dominant inheritance	1- Non-insulin requiring a a- Diabetic GTT b- Fasting hyperglycemia 2- Insulin requiring	MODY: Maturity-onset diabetes of young
III. Malnutrition-related diabetes mellitus (MRDM)	a. Fibrocalculous pancreatic diabetes. b. Protein-deficient diabetes		Insulin-dependent for health and life not for prevention of ketosis
IV. Other types, including diabet mellitus associated with certain conditions and syndormes:	1- Pancreatic disease 2- Hormonal etiology 3- Drug- or chemically induced 4- Certain genertic syndromes 5- Insulin receptor abnormalities 6- Other miscellaneous conditions		
B. Impaired glucose tolerance (IGT)	a. IGT in obsese b. IGT in nonobses. c. IGT in MODY. d. IGT associated with certain conditions and syndromes: 1. Pancretic disease. 2. Hormonal etiology. 3. Drug- or chemically induced. 4. Certain genetic syndromes. 5. Insulin receptor abnormalities. 6. Other miscellaneous conditions		ICA positive in type 1 DM
C. Gestational diabetes (GDM).			May be precursor of type II or type I diabetes.
Statistical risk classes:			
A. Previous abnormality of glucose tolerance (prevAGT).			
B. Potential abnormality of glusoce tolerance (potAGT).			ICA positive, decreased first phase insulin response in type I DM.

* a: Major clinical forms of diabetes.
* b: Major clincial form in parts of Africa, Asia, Carbbean

Source: Strefan, S.; Fajans, M.D.:Classification and diagnosis of diabetes. In: Diabetes Mellitus, theory and practice, 4th ed. Rifkin, H.; Porte, D. Jr. (eds), Elsevier science publishing Co., New York, Amsterdam, London, 1990; 22: pp347.