Profile of Diabetic Ketoacidosis in a Predominantly African American Urban Patient Population

The occurrence of diabetic ketoacidosis (DKA), a serious but largely preventable acute complication of diabetes mellitus, has been declining in recent years. However, empiric observations indicate that DKA continues to have a major effect on ethnic minority patients in inner-city settings. In this study, we conducted a retrospective analysis of five-year hospital admission data for DKA at a single inner-city hospital that serves a largely uninsured adult African American population. A computer-assisted search of the International Classification of Diseases, Ninth Revision, Clinical Modification codes for DKA revealed 847 admissions for confirmed DKA in 630 patients. Of these, 592 (94%) were African Americans, 22 (3.5%) were Whites, and 16 (2.5%) were Hispanics. The mean age was 43.4 ± 4 years. Five hundred seventy-one (90.6%) of the patients had type 1 diabetes, and 59 (9.4%) had type 2 diabetes. One hundred forty-five patients (23%) were newly diagnosed with diabetes. Ninety-four (14.9%) of the patients had multiple admissions, ranging from 2 to 23 admissions per patient during the five-year period, while the remaining 391 (62.1%) patients were single admissions. Half of the patients (52%) did not have health insurance. Major precipitating factors for DKA included discontinuation of insulin, infection, and other medical illness in 501 (59.1%), 136 (16.1%), and 30 (3.5%) of the admissions, respectively. In conclusion, these data demonstrate that DKA continues to have a major effect in urban African American patients with diabetes. Therefore, multiple targeted interventions are needed in this population to improve diabetes care and thereby decrease the frequency of DKA. (Ethn Dis. 2007;17:234–237)

Key Words: Admissions, Diabetes Mellitus, Diabetic Ketoacidosis (DKA)

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Introduction

Diabetic ketoacidosis (DKA) is a common and serious acute complication of diabetes caused by a relative or absolute lack of insulin. Diabetic ketoacidosis (DKA) is one of the preventable acute complications of diabetes mellitus through appropriate outpatient diabetes management. Although the management of DKA has been markedly improved in recent years in association with the general healthcare improvements, it is still a public health problem. In 1983, the incidence of DKA was reported to be 46 per 10,000 patients with diabetes.1 During the last two decades the trend of DKA admissions has been increased.2 Part of this increased frequency of admissions may be related to the increased prevalence of diabetes mellitus. Moreover, multiple episodes of DKA have also contributed to the increase of admissions,3 but the age-adjusted mortality rate has been improving over the last two decades.2

In earlier reports, infection was the major precipitating factor in 33%–56% of cases, followed by noncompliance with therapy, including discontinuation of insulin and oral medications and nonadherence to diet, in 4%–25% of the cases.4–11 Most of these studies were done on White populations, the results of which may not apply to African American populations. Contrary to these reports, a study by Musey et al12 in a largely African American population showed that the major cause of DKA was discontinuation of insulin therapy in up to 67% of the cases. More than 50% of the patients discontinued or reduced the insulin dose; 21% did not know how to manage their insulin dosage with change of diet and physical activity; 14% discontinued insulin because of behavioral or psychological reasons; and 14% stopped insulin because they did not know what to do when they became sick.

Empiric observations in our city indicate that DKA continues to have a considerable effect on ethnic minority patients in an inner-city hospital that serves disproportionately large uninsured adult African American population. This study was intended to expand previous empiric observations by investigating the causes of DKA and its complications during a five-year period and to suggest preventive measures to reduce the impact of the problem.

Methods

Patient Population

This study is a retrospective analysis of confirmed DKA admission to one inner-city hospital in Detroit during the five-year period from January 1, 1999, to December 30, 2003. The hospital is a teaching facility associated with a medical school. It serves a largely indigent urban population that is >90% African American. Many of the patients are under- or uninsured for health care.

Diabetic Ketoacidosis Admissions: Criteria and Confirmation

A computer assisted search of the International Classification of Diseases,