

MEDICAL CARE OF THE DIABETIC PATIENT

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INTRODUCTION

The quality of life in a diabetic patient is influenced by numerous factors, in addition to directly related medical complications. The prevalence of diabetes in Singapore among adults aged 18 to 69 is 8.9% as reported in the National Health Survey completed in 2004¹. A high proportion of male have diabetes (8.9%) compared with females (7.6%). Indians have the highest prevalence of the disease (15.3%) compared with Malays (11.0%) and Chinese (7%).

This survey found that 49.4% of Singapore residents who had Diabetes had not been previously diagnosed. Of these, 51.3% were females and 47.7% were males. The proportion of undiagnosed was high for Malays (55.6%) and Chinese (50.4%), compared to Indians (38.0%). The survey also found that 12.0% of Singaporeans aged 18 to 69 had impaired Glucose Tolerance (IGT). Persons with IGT are at higher risk of developing diabetes and need regular medical follow-up. Further, the survey also showed that 27.6% of known diabetics had unacceptable blood sugar control (where the HbA1c is 8 or greater).

Diabetes is associated with a high prevalence of affective illness and adversely impacts employment, absenteeism and work productivity. The burden of the disease and its complications on the individual and society is enormous. To lessen the economic impact on the individual, the Ministry of Health Singapore allowed the withdrawal of Medisave to pay for the outpatient treatment of the disease in October 2006.

This Editorial gives an overview of the medical care for patient with diabetes. The reader is encouraged to read the six units of the Family Medicine Skills course for further discussion related to screening, evaluation and treatment of the disease.

EVALUATION FOR DIABETES COMPLICATIONS

Morbidity of diabetes is a consequence of both macrovascular (atherosclerosis) and microvascular disease (retinopathy, nephropathy, and neuropathy). The onset of the disease is insidious in type 2 diabetes and diagnosis is often delayed. As a result, diabetic microvascular complications may be present at the time of diagnosis². With aggressive intervention, such as optimal control of glycaemia, laser treatment of retinopathy and administration of ACEs and ARBs, the progression of these complications can be delayed, but probably not stopped.

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Eye screening

Adults with Type 1 diabetes should have an initial eye screening within five years after the onset of the diabetes. Patients with Type 2 diabetes should have an eye screening immediately or soon after diagnosis and thereafter, repeated annually.

Foot screening

Foot problems due to neurological and vascular disease are common in diabetics. Systematic screening examination starting with careful inspection of the feet may reduce the morbidity from foot problems. Sensation of the feet can be tested using a Semmes-Weinstein 5.07(10g) monofilament at specific sites. A history of claudication should be asked as part of the screening process for peripheral arterial disease followed by an ankle brachial index assessment if the patient is symptomatic. The presence of peripheral arterial disease also suggests a high likelihood of cardiovascular disease.

Screening for nephropathy and treatment for microalbuminuria

The earliest clinical finding of nephropathy is increased urinary excretion of protein. Screening with a specifically sensitive dipstick or a laboratory assay on a spot urine sample, to determine the albumin-creatinine ratio, can detect microalbuminuria. Therapy with an ACE inhibitor or ARB has been shown in numerous studies to slow the disease progression and decrease urinary protein excretion.

Screening for coronary artery disease (CAD)

Patients with diabetes have an increased risk for atherosclerosis due to the disease and presence of other risk factors such as smoking, hypertension, and dyslipidemia. Furthermore, diabetic patients with CAD are more likely to be asymptomatic or have atypical symptoms than non-diabetic patients with CAD due to autonomic neuropathy.

REDUCING THE RISK OF MACROVASCULAR DISEASE

At the time of diagnosis, many patients with Type 2 diabetes have one or more risk factors for macrovascular disease (obesity, hypertension, dyslipidaemia, and smoking) and many have evidence of overt atherosclerosis (past myocardial infarction, ischaemic changes on ECG or peripheral arterial disease). The United Kingdom Prospective Study (UKPDS) suggests that a substantial reduction in cardiovascular mortality can be achieved by smoking cessation, daily low dose aspirin, aggressive treatment of hypertension and dyslipidaemia.

Smoking cessation

Meta-analysis of many cardiovascular risk reduction trials showed that cessation of smoking has a much greater benefit on survival than most other interventions.

Low dose aspirin

The benefits of aspirin in patients with macrovascular disease are widely accepted. A meta-analysis of secondary prevention trials found that the absolute benefit of aspirin is greatest in patients over the age of 65 with diabetes or diastolic hypertension³.

Blood pressure control

Hypertension is common in both Type 1 and 2 diabetes. Early and effective treatment of blood pressure is important, both to prevent cardiovascular disease and to minimize the rate of progression of diabetic nephropathy and retinopathy. Management includes non-pharmacological intervention such as weight reduction, salt reduction and exercise. Choice of pharmacological agents will depend on their ability to prevent cardiovascular events and slow the progression of renal disease^{4,5}.

Dyslipidaemia

Lipid abnormalities are common in patients with diabetes and, without doubt, contribute to increase risk of cardiovascular disease. Diabetes has been made a coronary heart disease equivalent by the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (ATP III).

GLYCAEMIC CONTROL

Prospective and randomised control trials, such as the UKPDS and the Kumamoto study, have demonstrated the benefits of aggressive glycaemic control in decreasing the rates of retinopathy, nephropathy, and neuropathy. Every 1% drop in the level of HbA1c is associated with improved outcomes with no threshold effect. However these benefits have to be weighed against an increased risk of hypoglycaemia. The importance of tight glycaemic control for protection against cardiovascular disease has been established in the DCCT/EDIC study for type 1 diabetes⁶. The aim is to achieve normal or near normal HbA1c goal of < 7%. Less stringent goals may be considered for patient with history of severe hypoglycaemia, limited lifespan, or individuals with multiple comorbidities. HbA1c levels should be obtained at least twice yearly in patients who have stable glycaemic control and quarterly in patients whose therapy has been changed or who are not meeting glycaemic targets.

Therapy of Type 2 Diabetes involves both pharmacological and nonpharmacological therapy. There are three major components to nonpharmacological therapy in Type 2 diabetics:

- κ dietary modification,
- κ exercise, and
- κ weight reduction.

Pharmacological therapy involves the use of drugs of different class (Biguanides, Sulphonylureas, Alpha glucosidase inhibitors, Thiazolidinediones) as single therapy or in combination to achieve glycaemic targets. Insulin therapy is required at some point in the life history of the Type 2 diabetic, e.g., when the diabetes cannot be controlled despite maximum oral hypoglycaemic agents.

OTHER HEALTH MAINTENANCE

It is important not to get obsessed with the patient for not achieving his or her glycaemic targets and forget that a diabetic, like any other individuals, is also prone to develop other illnesses. Preventive services such as vaccination, cervical and breast screening should be offered to the diabetic as well, no different with any other individuals.

CONCLUSIONS

To reduce the risk of both macrovascular and microvascular complications in diabetics, multifactorial risk factor reduction and good glycaemic controls are required. There is also a need to improve the care of diabetics in Singapore as illustrated by the National Health Survey 2004. Strategies are needed to improve the glycaemic controls of diabetics. Healthcare providers need to be educated on targets of glycaemic control and methods of adjusting medication to achieve the control. Patients need to be educated on the benefits of risk reduction and good glycaemic control. This can be achieved through structured training programmes such as skill courses for the healthcare provider and structured clinical management pathways.

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