Module III-7

Long-term complications

Overview

While the underlying pathophysiology and management of both of the major forms of diabetes differ, a common feature is the development of long-term micro- and macrovascular complications, such as retinopathy, nephropathy, macrovascular disease and peripheral and autonomic neuropathy. These complications are associated with increased morbidity and mortality.

The predictors for the development of microvascular complications are duration of diabetes and poor metabolic control. However, the progression of these complications can be reduced by prompt and intensive treatment. Therefore, strategies must be in place for their early detection.

As type 2 diabetes can be present for many years before diagnosis and up to 30% of people already have a complication at diagnosis, the assessment of complications should begin at diagnosis and annually thereafter. Adults with type 1 diabetes should be assessed within 5 years of diagnosis and annually thereafter.

Goals

- To develop a comprehensive understanding of the pathophysiology of micro- and macrovascular complications
- To provide participants with an understanding of their role in recommending and advocating for early screening and prompt treatment, and in some cases performing screening for complications
- To discuss the implications of monitoring and treating long-term complications
- To understand the psychological consequences of long-term complications for the individual and the family members
- To discuss the necessity of being honest and adopting a positive approach to the prevention and management of complications, and of not using scare tactics and threatening messages

Module III-7b

Diabetic nephropathy

Objectives

After completing this module the participant will be able to:

- Counsel parents of children, adolescents and adults about the risks of developing nephropathy associated with poor glycaemic control
- Describe the epidemiology of diabetic nephropathy including rates of incidence and prevalence
- Describe predictors of the development of nephropathy and the natural history of the disease
- Describe the various levels of renal involvement, including hyperfiltration, micro- and macroalbuminuria, chronic kidney disease
- Discuss the transient nature of microalbuminuria and the causes of transient increases in albumin excretion
- Discuss the diagnostic tests used in screening for kidney disease
- Discuss the impact of microalbuminuria in type 1 diabetes and type 2 diabetes
- Know that microalbuminuria is a marker for vascular dysfunction and possibly vascular disease
- Describe the use of estimated glomerula filtration rate (eGFR)
- Describe the various intervention studies demonstrating the benefits of improving glycaemic control – including the Diabetes Control and Complications Trial (DCCT) and UKPDS
- Describe the relationship between hypertension and the progression of kidney disease in diabetes
- Describe the importance of blood pressure control in the prevention and management of diabetic kidney disease
- Describe the various intervention studies demonstrating the benefits of improving hypertension – including the Lewis, PRIME, CALM, and HOPE studies
- Know that ACE inhibitors and angiotensin II receptor blockers (ARBs) are first-line treatment, if available, for people with diabetic kidney disease

	• Describe the clinical features of chronic kidney disease • Describe the impact of lifestyle factors, such as excessive intake of salt or alcohol, on blood pressure • Describe possible dietary changes with the progression of kidney failure • Know the need for reducing insulin requirements in chronic kidney disease • Know that kidney transplantation is a treatment option for some people • Describe the psychosocial impact of chronic kidney disease on people with diabetes and their relatives (refer to Module I-4, Psychosocial and behavioural approaches) • Investigate the resources available in the community • Describe the differences between peritoneal and haemodialysis*
Teaching strategies	Lecture Experiential learning
Suggested time	Formal session involving case study: 1-2 hours
Who should teach this module	Endocrinologist, diabetes educator, renal nurse, nephrologist
Evaluation of learning	Role play discussing the implications for a person with newly diagnosed kidney disease and the required management
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UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes (UKPDS 38). *BMJ* 1998; 317: 703-13.

* Indicates objectives at an advanced level

Detailed content for this module is available as a slide presentation at www.idf.org