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Continuing Medical Education

PROCEEDINGS OF AN ADVANCE COURSE IN MANAGEMENT OF DIABETES

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Baqai Institute of Diabetology and Endocrinology organized an advance course on diabetes management for family physicians at Karachi form December 31st 2001 to January 2nd 2002. Dr. A. Samad Shera from Karachi was the first speaker who discussed current concepts in diabetes. Diabetes, he said, is a life long commitment, it must be effectively organized and delivered like any other therapy. According to WHO, by 2025 there will be three crore diabetics of which 75% will be in the developing countries. Pakistan will be the fourth country in this list after India, China and USA, in terms of number of people with diabetes by the Year 2025. Similarly the incidence of impaired glucose tolerance will be much greater in these countries. IGT patients have the same risk of developing coronary artery disease and having myocardial infarction as that of known diabetics.

Obesity and family history are important risk factors. If one parent is diabetic, one out of two children is likely to have type-II diabetes but if both the parents are diabetics, three out of four children are likely to suffer from type-II diabetes. As regards Type-I, if father is diabetic, one in twenty children will become diabetic and if the mother is diabetic, one in hundred children will develop Type-I diabetes. Type-I diabetes is very uncommon in Pakistan. Studies have shown that in India, people with lowest income spend much more on diabetes. He emphasized that awareness, early detection was very important in diabetic care. We tend to treat diabetes when the patient's come with some complications and it is very expensive to treat. Our goal, he stated, should be prevention, which is the only solution to this menace. Early detection and early treatment should be our goal.

As regards primary prevention the risk factors include obesity, hypertension, hyperlipidemias, and age over forty years, previous gestational diabetes mellitus and previous impaired glucose tolerance. UKPDS has shown that with good control and just 1% reduction in HbA1c will lead to 12% reduction in diabetes related end points, 25% reduction in micro vascular endpoints and 16% reduction in macro vascular endpoints in type-2 diabetes. Similarly just 10mmHg reduction in blood pressure will lead to 24% reduction in diabetes related endpoints, 44% reduction in stroke and 37% reduction in micro vascular complications. The DCCT trial, which was conducted in patients with Type-I diabetes, showed that good blood glucose control results in 63% reduction in retinopathy, 41% reduction in macrovascular disease, 54% reduction in nephropathy and 60% reduction in neuropathy.

Types of diabetes: Type-I is autoimmune and idiopathic, Type-II which is predominantly insulin resistance and predominantly insulin secretory defects, gestational diabetes and drug induced diabetes etc. As regards diagnosis the cut off point for diabetes is fasting blood glucose levels of more than 125 and more than199 with two-hour post glucose load. In IGT the

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fasting blood glucose levels are between 110-125 and betwen140-199 two-hour post glucose load. One should never get confused with diagnostic criteria and control levels. The HbA1c should be less than 7%. The diabetics should be asked to have normal diet minus sugar. Their diet should contain 55-60% carbohydrates, 12-20% proteins and 20-30% fats. One should never combine two sulphonylureas. Biguanides are also quite effective. More recently we have new anti-diabetic preparations like insulin sensitizes but they are not yet available in Pakistan and they are also very expensive. They also require monitoring of LFTs. Type-I diabetics will require insulin all the time and 25% patients do not respond to antidiabetic preparations alone. Beef insulin is now available in Paksitan. The patients should be taught where to inject insulin. They must avoid injecting it in forearm and leg. The right place for insulin injections is abdomen and thighs, which should be preferred. If the insulin syringe is not cleaned with spirit, it can be reused if it is used only for insulin. Diabetes never takes a holiday. All diabetics should be advised to take 75-100mg of Aspirin daily. Almost 50% of diabetics are hypertensives as well; hence control of blood pressure will reduce the morbidity and mortality in diabetics. Diabetics should have a BP of less than 130/80. In diabetics with micro albumin urea, ACE Inhibitors are very effective as they slow the progression of the disease. Smoking is dangerous and we must eat less and work more to prevent and control diabetes.

Replying to the questions during the discussion he said that metformin, sulphonylureas and insulin could be combined. We usually tend to start insulin late. If we can start insulin in time, one can use intermediate dose at night and continue with the oral hypoglycemic agents in the day, he added.

MANAGEMENT OF DIABETES

Prof. Hajera Mehtab from BIRDEM Bangladesh talked about management of diabetes. She pointed out that for each known diabetic, there are at least ten to fifteen unknown diabetics. As the people become aware, the incidence of complications is reducing. In many cases patients are diagnosed as suffering from diabetes after they have had myocardial infarction or stroke. Diabetes alone she opined, is much easier to control. If detected in early stages. In Bangladesh IGT is seen more in rural areas as compared to urban areas. Hence, there is lot, which can be done.

Diabetes Mellitus consists of many syndromes like abnormal carbohydrate metabolism characterized by hyperglycemia. It is associated with relative and absolute insulin impairment. The normal HbA1C is 6.1%. Those who have HbA1C between 6.1- 6.9 have impaired fasting glucose while HbA1C of more than 7.00% or those with blood glucose of more than 200 are diabetics. All those who have family history of diabetes and those who have gestational diabetes, central obesity, high risk ethnic groups, those suffering form hypertension, dyslipidemias need to be screened for diabetes. One must modify the diet plan according to the patient's habits to have better compliance. Peripheral insulin resistance and impaired insulin secretion contributes to hyperglycemia. Onset of diabetes should be delayed. HbA1C of less than 7.0 mmol/L is desirable. She was of the view that glucometer strips should be subsidized so that more and more diabetics could monitor their blood glucose at home. There is reduction in eye complications due to increased awareness among the diabetics. With longer duration of diabetes, the prevalence of retinopathy increases. Heart diseases and complications are the major cause of death in diabetics. Glucose intolerance increases the risk of mortality from coronary heart disease. Strict control of blood glucose levels will make the life of diabetics easier. The DCCT trial has shown that with good control there is 63% reduction in ret-

Those with family history of diabetes, Gestational Diabetes, central obesity, hypertensive, dyslipidemias and high-risk ethnic groups need to be screened for diabetes.

inopathy, 54% reduction in nephropathy, 60% reduction in neuropathy and 41% reduction in cardiovascular diseases. American Diabetic Association treatment goals for glycemic control now mention HbA1C level of less than 7%. In young diabetics, the degree of control has to be very strict as compared to elderly. For elderly even HbA1C level of 7.5% will be all right as it goes up slightly with the age. Prof. Hajera Mehtab advised that each patient should be approached individually, consider main defects, and target postporandial glucose control. Metformin is contraindicated in renal failure. Insulin should not be under utilized or used forever in Type-II diabetics. In future we may have inhaled insulin available but it may be much expensive and how effective it will be is not known at present.

Although HbA1C levels are the gold standards but in pregnancy there are many factors, which do influence HbA1C, but still it is better. It is helpful in monitoring but for dose adjustment one needs spot test. Use of statins in diabetics, though helpful but they are very expensive. Anxiety does affect the blood glucose levels. Gestational diabetes should be controlled with insulin. After childbirth if the blood glucose levels are normal, it is OK but if the patients continues to have diabetes or has IGT, then they can be put on oral hypoglycemic agents. Metformin does reduce weight, is good for obese patients but it does have some complications, she remarked.

DCCT trial has shown that good control of diabetes results in reduction in retinopathy (63%), nephropathy (54%), neuropathy (60%) and cardiovascular disease by 41%.

PRIMARY PREVENTION OF DIABETES

Dr. Abdul Basit from BIDE discussed primary prevention of diabetes mellitus. By definition primary prevention, he said means all measures designed to reduce the incidence of a certain disease in a population reducing the risk of its onset. Increase in HbA1C increases the risk of coronary artery disease. Studies have shown that about 14% of IGT patients are converted to diabetics each year while in some Asian countries this figure increases to 50%. Obesity is an important risk factor, which can be avoided. Some other risk factors, which can be modified, include physical inactivity. Gestational diabetes should be immediately controlled. Low birth weight girls when they grow up and after marriage become pregnant they are prone to develop gestational diabetes mellitus. Similarly low birth weight baby boys are associated with impaired insulin resistance. It is important to manage obesity, dietary control and fetal undernutrition. More fiber intake, exercise, and BP control will result in almost 58% reduction in diabetes. Children who have a family history of diabetes their fasting blood glucose is higher. Similarily cholesterol of children of hypertensive parents is higher. To control diabetes, we need dedicated people at the primary healthcare level. We need to have diabetic units in all the institutions, diabetic teams and students interested in diabetes. In UK these days family physicians or GPs have a group practice. If there are four members in the team one of them will be interested in chest, other in diabetes, third in hematology and the fourth in hepatology and so on. This is the cost effective way of treating diabetes. Dietitians and educationists are important members of this diabetic team, Dr. Basit added.

MICRO VASCULAR COMPLICATIONS OF DIABETES IN BANGLADESH

Prof. Hajera Mehtab from BIRDEM Bangladesh discussed micro vascular complications of Type-II diabetes. She was of the view that we must assess and evaluate the quality of care that we have been providing all these years to improve the standard of care. Very few studies on Type-II diabetes complications have been done in this part of the world. Diabetic retinopathy in Asia is reported to be 20.8%. In Sri Lanka it is 31.3%. In Korea diabetic nephropathy is reported to be 13.8%. For this study we at BIRDEM Prof. Hajera Mehtab said randomly selected

every 10th patient on male and female counter. We see about twelve hundred patients daily. The past diabetic record is available from the record book. After selection, all these patients had physical examination and HbA1C in addition to fundoscopy, fasting blood glucose, ECG and ETT. In selected cases echocardiography was also done.

A total number of 1647 diabetics were enrolled in this study. It included 791 male and 883 female. Mean age of the patients was 51.8 years. About 30% of these patients had the disease for more than five years. 34.8% had BMI of over 25. Blood pressure measurement showed that 42% were suffering from hypertension. Mean HbA1C was 8.01. 35% of the patients had good control while 22% had poor control, which showed that there was a need for more monitoring, education and counseling. Speaking about the lipid status of these patients Prof. Hajera Mehtab said that 9.9% of these patients had cholesterol levels of more than 200.To control cholesterol we often use fibrates as compared to statins, which are very expensive.

In hypertensive diabetics, 23.2% were given ACE Inhibitors, 34.9% were on beta-blockers. All patients had dilated pupil examination. The number of complications increased with the duration of diabetes. With proper care, we can delay the progression of the disease. In our patients, 29% had diabetic retinopathy and 25% had nephropathy. The study also revealed that with good control, the prevalence of diabetic retinopathy was reduced. Isolated systolic hypertension, she remarked, must be treated. By reducing the HbA1C by 1%, we can reduce the incidence of nephropathy by 17% and retinopathy by 32%. Similarly a 10mmHg reduction of blood pressure can result in 20% reduction in nephropathy. She concluded her presentation by stating that in this study almost every second patient was suffering from hypertension, every third patient was obese, every fourth patient had retinopathy, every 5th patient had nephropathy and every 6th patient had neuropathy.

Replying to the questions during the discussion Prof. Hajera Mehtab said that systolic hypertension is also very important. In the past it was not taken seriously but now it has been realized that it must be treated. ACE Inhibitors were compared with beta-blockers while treating diabetic hypertensives in this trial. It showed that patients on ACE Inhibitors had more side effects AII antagonists were found to be initially good and effective but they are very expensive. Responding to another question she said that there is difference in insulin dependent and insulin requiring patients. We have many patients who suffer from diabetes who are thin and lean. They will need insulin. On the whole we have significant number of type-II diabetics who are quite young. Insulin dependent patients are just about 1-2%. Our major resources go for providing cure rather than research. Patients are usually reluctant to take insulin and it is also true for Bangladesh. There is a need for lot of counseling and education to convince the patients to take insulin. Once good diabetic control is achieved with insulin; the patients can always go back on oral hypoglycemic agents. AII antagonists are safe. ACE Inhibitors are associated with lot of side effects in our population. She emphasized that one should always use cheapest, safe and cost effective medicines.

TYPE-I DIABETES

Dr. Qamar Masood spoke on insulin and Type-I diabetes. He pointed out that the youngest type-I diabetic he has seen was of less than two years of age. Insulin deficiency leads to weight loss and beta cells damage results in absolute insulin deficiency. Hence these patients are then called as Type-I diabetics. Ketosis prone diabetics, he said will need insulin for survival. There is no evidence of auto immunity. It is strongly inherited. Absolute insulin requirements may come and go in idiopathic type of diabetes. In Type-II diabetes, there is insulin

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resistance with relative insulin deficiency. He then described few case histories of Type-I diabetics and also discussed their management in detail. In patients who complain of weight loss, lethargy and vomiting besides other symptoms, one must consider the possibility of Type-I diabetes. Patient education is very important. Type-I diabetes can occur at any age. The autoimmune process is usually slow; hence one must look for other disorders.

Speaking about the goals of medical nutrition therapy Dr. Masood said that one must check the minute details. Maintain blood glucose to as normal as possible. Do not restrict calories

Diabetics are two to four times more prone to develop heart disease

intake of the patients unless they are obese. Efforts should be made to improve overall health through optimal nutrition. Usually there is lot of hesitancy and resistance to start insulin. Before the discovery of insulin, starvation therapy was advocated for managing type-I diabetics. One should try to match the insulin levels to what the pancreas will produce if it was healthy. Consider type of food, amount of food and physical activity. Talking about the types of insulin available in the market, he said that soluble regular insulin has its effect for four to six hours. Lispro is the fastest acting insulin and it has an early sharp peak levels. Intermediate acting insulin start working in two to four hours and reach the peak levels in eight to ten hours. Its duration of action is between 12-20 hours. He then discussed the insulin doses before puberty and after puberty as well as in adulthood. In some cases two third of insulin requirements can be given in the morning and one third in the evening. Short and intermediate acting insulin taken twice daily are more commonly used. He also discussed the advantages and disadvantages of various insulin preparations besides elements of intensive insulin therapy. DCCT trial, he said has shown that intensive insulin therapy reduces the complications significantly.

Replying to questions during the discussion he said that beta cell transplants are done in some centers in different countries of the world but they require immunosuppressive drugs. One should avoid hypoglycemia and ketoacidosis. Severe hypoglycemia in too small children in particular must be avoided since it is very dangerous as there are chances of their brain development being affected.

MICRO VASCULAR COMPLICATIONS OF DIABETES

Dr. Yakoob Ahmedani spoke on micro vascular complications of diabetes mellitus i.e. foot problems, retinopathy, nephropathy and neuropathy. Development of these complications, he stated must be prevented or delayed by intensive therapy. While treating these patients one must target improved vision, prevention and slowing the progression of retinopathy. Carefully monitor the patients with a yearly follow up and during pregnancy. These patients must be screened early, ensure good diabetic control; treat pain with analgesics, antidepressants and anticonvulsants as indicated. Patient education about neuropathies is also very important, he added.

MACRO VASCULAR COMPLICATIONS OF DIABETES

Dr. Abdul Jabbar talked about macro vascular complications of diabetes. He opined that diabetes has now become a syndrome since all the body tissues are in-

Dietitians & educationist are important members of the diabetic team

volved. It is a stage of premature death associated with hyperglycemia. It is a chronic disease with no cure. Many patients become aware when they develop one of the life threatening complications like myocardial infarction, coronary artery disease, stroke, which kill the patients. Diabetics, he said, are two to four times more prone to develop heart disease. Short-term complications include ketoacidosis, hypoglyce-

mia while long-term complications include retinopathy, nephropathy, neuropathy, heart disease, stroke, and peripheral nephropathy. While managing these patients HbA1c levels of 6.5 should be preferred. About 20% of patients admitted to various hospitals due to foot problems are diabetic. The diabetics must be persuaded to stop smoking. All diabetics should be put on low dose aspirin therapy. Early detection, exercise, Diet control, evaluation and life style modifications play an important role in the management of these patients. In diabetic hypertensive the blood pressure should be maintained at 130/85. Speaking about the economic complications of diabetes, he pointed out that the cost of prevention of diabetes is much less as compared to treatment cost.

DIET AND EDUCATION

Miss Sina Rashid and Dr. Mansoor conducted the diet and education workshop. Miss Sina Rashid emphasized the importance of low fat, concentrated and distributed carbohydrates and high fiber diet. An ideal diet, she said, consists of 55% carbohydrates, 15% proteins and 30% fats. Dr. Mansoor discussed the importance of education, diet, weight control, regular exercise besides drug therapy in management of diabetes. Education and motivation of diabetic patients he said is very important. In fact there is a need to educate the patients, their families, members of the healthcare team and the entire population regarding diabetes, he remarked.

DIABETIC FOOT

Dr. Abdul Basit spoke on diabetic foot. Most of the foot problems, he said, are preventable and it is the most feared complication. With good control, almost 50% of amputations can be prevented. They conducted a study on 126 patients of which 72 patients had foot problems. The age of the patients was between 40-60 years and 72% of the patients were male. 53% of these patients had diabetes for the last five to ten years. 18% of the patients developed foot ulcers before five years. 41% had proteinuria.

Most of the foot problems are preventable and it is the most feared complication of diabetes.

20% gave history of trauma and 8% had burns. 18% had foot ulcers while 13% had dry skin. 49% had previous history of foot ulcer. 97% were aware of the risk factor for foot ulcer. 17% had absent sensation, 58% had neuro Ischemic ulcers and 45% had ulcers on toe followed by sole. 60% of these patients were put on combination therapy of antibiotics, 53% needed hospitalization. Average duration of treatment was three months. He then discussed the various quick ulcer-healing techniques in detail.

Lt. Gen. S. Azhar Ahmad Vice Chancellor of Baqai Medical University was the chief guest in the concluding session. He highlighted the importance of understanding problems of diabetes some of which are simple while others were very much complicated. He emphasized the importance of specialized tertiary care diabetes centers in the country since complicated problems need minute attention. He advised the doctors to prevent the development of diabetes in their families and children. Mass screening of the population, he opined, is not possible. Diabetic patients should be asked to have their family members screened. They should also be advised about regular exercise, which is most effective for prevention and control of heart disease as well as diabetes. Later he distributed certificates among the participants of the course.