RESEARCH SOCIETY FOR THE STUDY OF DIABETES IN INDIA
RSSDI
1972

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RSSDI NEWS

1998 • 4 • April

26th Annual Scientific Meeting of the Research Society for the Study of Diabetes in India
on December 18, 19 and 20 at Ahmedabad

rssdi 98 themes

QUALITY OF DIABETES CARE AND ITS EVALUATION

This topic is selected as the main theme of our Annual Scientific Meeting to be held in Ahmedabad this year. This will give us an opportunity to

1. Assess the quality of diabetes care being provided at different levels (primary care physician, tertiary care centre, private clinics, medical colleges etc.).

   Some of the questions we need to address are :

   a. What is the quality of care being provided at different levels of health care?
   b. If inadequate, what remedial measures should we consider?
   c. What is the cost of diabetes care? What other inputs are required? Can we prioritise amongst different aspects of diabetes care which are more important than others?
   d. Whom should we entrust different aspects of diabetes care?

2. Define and elaborate upon the methods we should use to evaluate the quality of diabetes care.

   Some of the questions we need to address are :

   a. What is good diabetes care? What are its components?
   b. What is the relative importance of each component? Can we design a screening system to quantitate the quality of diabetes care?

DOES FAST FOOD KILL FAST?

Fast Food : It is difficult to define fast food by convention, it is the food that can be prepared and served rapidly to suit modern fast pace of life.

The typical examples of American fast foods are : French fries, Hamburger, Pizza, Ice-cream, Hot Dog etc. The few typical Indian fast foods are : Pav Bhaji, Bhel Puri, Idli, Dosai, Pakoras etc. The fast foods may be nutritious but are likely to suffer from following drawbacks :

1. They are usually calorie packed or calorically dense.
2. They usually are high in carbohydrate and fat but somewhat low in protein.
3. They usually have poor contents of vegetable or fruits and hence are deficient in micronutrients which are present in vegetables and fruits. They may have poor content of antioxidants, vitamins, fiber and other micronutrients.

Registration is Rs.1000, Rs. 750 for life members and Rs.500 for accompanying persons by draft favoring RSSDI 98 to be sent before September 30 to the Organizing Secretary, Dr. Mayur R. Patel, 304 Supath, Nr Vijay Char Rasta, Navrangpura, Ahmedabad 380 009, Gujarat, tel 079 460607, 401030

Submit abstracts before September 30, to the Chairman, Scientific Committee, Prof. H.B. Chandalia, Diabetes Bulletin, 103 Lady Ratan Tata Medical Center, M. Karve Road, Mumbai 400 021, tel 022 2871613, 3633695, 3634320

DIABETES RESEARCH FORUM

There is imperative need that RSSDI should continue and initiate more activities for promoting research at the national level. Even though it was discussed number of times at Executive Committee meetings, it has not taken any concrete shape so far. On the 25th anniversary of the Society, *Prof. M.M.S. Ahuja has decided to take steps for formation of Diabetes Research Forum with a seed money donation of Rs. one lakh.*

The objectives of the Diabetes Research Forum will be

1. To design research projects which would reflect national characteristics of diabetes mellitus in India. Study designed at 3 or 4 centres employing uniform methodology.
2. To seek overseas inter-liaison for collaboration and co-operative research on Asian Indians.
3. Through research projects, evolve recommendations towards reducing complications, care costs and improving quality of life for diabetes in our country.
4. To provide financial support (seed money) for the above projects. The investigator should secure basic resources from local institutions.
5. Advisory committee will organize orientation, framing of protocol and quality assurance for the approved projects.

Each member of the research forum will contribute Rs. one lakh as to be on the Advisory Committee.

Research Forum will receive recommendations from the Research Committee of the RSSDI and awards the research grants. Criteria for award will include scientific merit, design of study and competence of investigator.

LIFE MEMBERSHIP

Life Membership payment is Rs.1500, and Corporate Membership payment is Rs.100,000 by draft favoring RSSDI to be sent to the Secretariat in Hyderabad.

Membership numbers of life members who joined in 1996 and 1997, have changed as circulated in February issue of the RSSDI NEWS. Please write to Secretariat for additional copies of this issue.

CME in DIABETES

at Khajuraho
on October 3 and 4, 1998
by **Prof. B.N. Srivastava**
approved for 10 RSSDI credit hours
Registration enquiries to
Dr. Parimal Swamy
601/6 West Nillar Ganj
Jabalpur 482 002 MP
tel 0761 314832 25374 23688
fax 424973

9th RSSDI Course in Diabetology

approved for 20 RSSDI credit hours
Registration enquiries to
Dr. Sharad Pendsey
Shreenivas, opp Dhantoli Park
Nagpur 440 012 MS
tel 0712 545989 521898

ESICON 98

28th Annual Conference of the Endocrine Society of India on December 14, 15 and 16, 1998
Registration enquiries to
Dr. S.K. Singh
Division of Endocrinology
Institute of Medical Sciences
Banaras Hindu University
Varanasi 221 005 UP
tel 0542 317842 312464
fax 316068 314236

ELECTIONS FOR RSSDI EXECUTIVE COMMITTEE, 1999

Following the Silver Jubilee Annual General Body Meeting held at Chennai and as per the amended Constitution of the RSSDI, it is decided to elect the President, Vice Presidents, Secretary, Joint Secretary, Treasurer and Executive Committee Members for installing in the next Annual General Body Meeting at Ahmedabad in 1998.

Nominations from eligible life members with membership numbers upto 172 who joined RSSDI before July 1993 will be invited.

INTERNATIONAL JOURNAL OF DIABETES IN DEVELOPING COUNTRIES

We request medical teachers, researchers and scientists to send us a few articles a year for publication. These could be in the form of original articles, comprehensive reviews or case reports. If your busy schedule does not permit you to submit materials to us we would appreciate it if you could encourage other junior doctors to work under your guidance and to submit their work for publication.

CME in Diabetes

by Princess Durru Shehvar Children's Hospital
at Hyderabad on May 10, 1998
approved for 5 RSSDI credit hours
Register by sending draft for Rs.100 favoring **Princess Durru Shehvar Children's Hospital,**
IOB, Pattargatti br ac 6767 to
Dr. Mohammed Siraj
Princess Durru Shehvar Children's Hospital
Purani Haveli
Hyderabad 500 002
tel 040 520480 520548 526155 526455 522372 fax 4577009

CME in Diabetes

by Indian Medical Association
at Hubli on May 17, 1998
approved for 5 RSSDI credit hours
register by sending draft for Rs.200 favoring **IMA CME 98** to
Dr. Chandrashekhar S. Patil
Aradhyamath Bldg. Vidya Nagar
Behind Commerce College
Hubli 580 029 KA
tel 0836 268474 265225

CME in Diabetes

at Kurnool Medical College
on May 24, 1998
approved for 5 RSSDI credit hours
Please register by writing to
Prof. K.S. Thirumalachari
Plot 60, Kamalanilayam
Doctors' Colony
Kurnool 518 002 AP
tel 08518 25011

South Zone Diabetes Update 98

at Bangalore on August 7, 8 and 9, 1998
approved for 10 RSSDI credit hours
Register by sending draft for Rs.300 favoring **Organising Secretary - SZDU 98** to
Dr. S.R. Aravind
359-360 19th Main
1st Block Rajajinagar
Bangalore 560 010 KA
tel 080 3325824 3323560 3329909
fax 6606765
e-mail bhavana@blr.vsnl.net.in

Hoechst Marion Roussel
Continuing Medical Education service to RSSDI members

THE INTEGRAL MANAGEMENT OF DIABETES MELLITUS PATIENTS

A well-managed diabetic individual can lead an active life with the same ambitions and challenges as those without diabetes. Good Management Practice in diabetes results in consistent pre-meal blood-sugar levels below 140 mg/dL (7.8 mmol/L) and/or post-prandial glucose levels below 200 mg/dL (11.1 mmol/L). This decreases the incidence of dermal, retinal, renal, cardiovascular and neurologic complications in succeeding decades. Yet, post-prandial blood glucose test is the most neglected monitoring information.

Clinical Mission

At the molecular level, most complications begin years before clinical diagnosis. Hence, management essentials are early detection and a comprehensive treatment plan based on diet, exercise, education, counselling, medication, and regular monitoring without seriously compromising quality of life.

Biochemical Goal Criteria	mg/dL	mmol/L
Pre-meal blood glucose	< 110-140	< 6.1-7.8
2-h Post-prandial blood glucose	< 140	< 7.8
Bed-time blood glucose	≤ 115	≤ 6.4
Glycosylated hemoglobin (HbA_{1c})	≤ 7 %	
Total cholesterol	≤ 200	≤ 5.2
LDL cholesterol	≤ 130	≤ 3.4
HDL Cholesterol	> 50	> 1.15
Fasting serum triglyceride	≤ 200	≤ 2.3

Diet and Nutrition Goals

High calorie diet, unmatched to physical activity, leads to obesity, glucose intolerance, lipid disturbances, and complications. A low fibre diet with a high glycemic index (high sugar) is twice as risky for getting type 2 diabetes compared with a low sugar and high fibre diet. Besides, polyunsaturated fats and simple sugars provide the major part of dietary oxygen free radicals. These reactive elements induce endothelial damage, altered lipoproteins, and pro-inflammatory cytokines. Thus, they have a major role in the development of later complications.

Diet planning must involve the patient and family keeping in mind the ambient factors in the patient's home and work place. The plan examines food items, vitamin and mineral supplements, and the type and servings in each food category based on calculated caloric obligation for each patient. Some key elements to consider are:

1. More complex carbohydrates, adequate proteins, low fat, and low glycemic index diet.
2. Over-cooked food and items in liquid form intensify post-prandial blood glucose.
3. Eicosapentanoic and decosahexanoic fish oil fatty acids reduce risk of coronary events;
4. Dietary cholesterol should be under 300 mg/day, and
5. Frequent small meals help to avoid inappropriate swings in blood glucose levels.

An elementary diet advice until the doctor, the patient, and family can jointly work out the proper plan.

- Cut refined sugar by 100 %, fats by 50 %, and quantity by 25 %.
- The patient eats the same kind of food as the rest of the family, subject to the above percentage limitations.
- Inform the patient of the ideal body weight, derived from the Body Mass Index (BMI) calculation.

BMI = Weight in kg ÷ (Height in metres)^2. The ideal BMI for females is below 25, and for males below 27.

Exercise and Physical Fitness Goals

Exercise improves glucose tolerance. It increases insulin receptor sensitivity. Any activity that works major muscle groups, such as, brisk walking, swimming, jogging, or biking is advised. Regular exercise raises the efficacy of oral medication and insulin, and reduces cardiovascular risks. Strenuous exercise may cause hypoglycemia in medicated patients. Monitoring blood glucose before, during, and after exercise helps regulate the exercise, dosages, and diet. Brisk walking is a wonderful way to keep fit. One begins gradually and, depending on age and physical status, aims to walk no less than 5 km (3 miles) in one hour, on at least four or five days each week.

Management Goals in the Young

Insulin is quintessential for type 1 diabetics. During treatment, up to a third of type 1 patients may experience the *Honeymoon Period,* when there is partial restoration of insulin production by the remaining pancreatic beta cells. This phase may continue for weeks, months, or years. Maintaining low dose insulin therapy in this state may prolong the honeymoon period. Infrequently, an individual case could have a steep decline in insulin requirement making insulin injections risky. Thus, regular monitoring of blood sugar and HbA_{1C} through the honeymoon period is meaningful. In adolescents, as puberty begins, the body demands more insulin. Careful monitoring of such an individual is crucial, because it is easy to miss the end of the honeymoon period during onset of puberty.

Patient and Family Education Goals

Diabetes education may impose an additional burden on the primary care physician. However, the extra effort will compensate itself many times over, because of the expected better results. Following diagnosis, the first months are traumatic and difficult for the patient and family. The eagerness for learning is also high at this time. The learning programme with the aid of simple charts needs to discuss the topics listed below:

1. What is diabetes?
2. Diet, exercise, treatment and regular follow-up
3. Self-monitoring and self-injection
4. Care of feet, eyes, and oral health of insulin
5. Contraception, pregnancy and nursing
6. Facts about alcohol, drug, and tobacco
7. Recognizing and managing hypoglycemia
8. Early signs of complications

Parent Education Programme

The diagnosis of diabetes in a child is a traumatic event for parents. They need reassuring support to keep a balanced perspective on bringing up a diabetic child. Managed properly, diabetes should not prevent the child from normal physical and mental performance. Parents must understand that the child does not have to lead an austere lifestyle. Some items, such as ice cream is a great snack before bed, particularly if it is a regular vanilla or chocolate ice cream. The sugar content is not too high and the fat takes hours to be digested.

Pharmacological Management

Insulin and oral hypoglycemic agents (OHA) provide good glycemic control and are well tolerated in the majority of patients. In the short term, OHAs enhance insulin release, and intensify insulin response to correct the hyperglycemia in type 2 diabetes. In the long term, their extra-pancreatic effects are important. They increase the number of insulin receptors, improve their sensitivity to insulin, and amplify post-receptor effects.

Tolbutamide was the earliest of oral anti-diabetic agents used clinically, particularly in elderly diabetics.

Chlorpropamide has a long half-life of 36 hours. It is usually avoided in elderly subjects.

Glipizide is a second generation sulfonylurea. The initial dose is 2.5 mg/day, and may be gradually increased to a maximum of 40 mg/day.

Gliclazide is also a second generation sulfonylurea. It has a short duration of action. Generally, 80 mg twice daily, up to a maximum of 320 mg /day in divided doses, are used.

Glibenclamide is the most widely used second generation sulfonylurea in type 2 diabetes. The incidence of secondary failure with glibenclamide is low. Glibenclamide has a higher protective profile vis-à-vis the cardiovascular system. The initial breakfast dose is 2.5 mg once daily. The dose may be increased, as required up to 15 mg/day.

Glimepiride is a more pancreas-specific sulfonylurea. It has early onset and long duration of action. It stimulates insulin production after meals, when plasma glucose concentrations are high. Once-daily doses of 1 to 6 mg exert 24-hour control on blood glucose. It is a remarkably safe drug. It may be used even in elderly patients or for subjects with renal impairment. Current studies are looking for likely clinical benefit due to the compound's minimized binding behaviour to the potassium channel in the heart.

.. to be concluded

Research Society for the Study of Diabetes in India was registered under the Societies Registration Act, XXI of 1860 by the Registrar of Societies, Delhi Administration vide Certificate No. S 5480 of 1972-73 dated July 29, 1972 at Delhi.

THE INTEGRAL MANAGEMENT OF DIABETES MELLITUS PATIENTS

Pharmacological Management

Metformin is a biguanide OHA acting on carbohydrate and lipid metabolism. It increases peripheral glucose uptake, decreases glucose production in the liver, and reduces insulin need in type 2 diabetes. It may cause small decrements in plasma triglycerides and LDL cholesterol levels. Gastrointestinal side effects are common. Lactic acidosis, a serious condition, may occur in presence of renal or hepatic insufficiency. Metformin is not used in pregnancy, with alcohol, in presence of renal or hepatic insufficiency, or metabolic acidosis, or ketoacidosis.

Acarbose is an alpha-glucosidase inhibitor. It delays digestion of carbohydrates, and decreases post-prandial hyperglycemia and insulin secretion.

Combination therapy may be needed by some persons because of secondary failure to OHA monotherapy after many years of use. Likewise, under stress situations, due to illness or infection, or severe emotional calamity, a patient may fail to maintain metabolic control with an OHA. Primarily, the appearance of marked hyperglycemia in a previously well controlled patient, calls for a treatment review. Thus, one may alter the dosage, or add another oral drug, or add insulin. In secondary failure to sulfonylureas, a daily added evening dose of insulin consistently achieves glycemic control, and is just as useful as a complex multiple-injection plan. Combining metformin with a sulfonylurea lowers day-long plasma glucose and free fatty acid concentrations. It may be an efficacious alternative to added insulin in some persons, particularly in those who need to lose weight, and for persons with hyperlipedemia.

Insulin injection is an essential exogenous source of insulin for persons with type 1 diabetes. Many type 2 diabetics on oral drugs may need additional insulin later in life, due to a secondary drug failure, or associated illness. Bovine insulin, obtained from cattle pancreas, differs from human insulin in three amino acids. As a result, it is more antigenic than porcine insulin obtained from the pancreas of pigs. Porcine insulin deviates from human insulin in one amino acid. Semi-synthetic human insulin is manufactured by enzymatically replacing the amino acid alanine in the porcine insulin molecule by threonine. The biosynthetic method employs the genetic recombinant DNA technique using *Escherichia coli*, and does not depend on animal organs

There are four types of insulin formulations, based on duration of action. Thus, we have short acting, intermediate acting, long acting, and biphasic insulin. Biphasic insulin contains a mixture of short and intermediate acting (NPH) insulin. Often, the initial dose is 0.5 units/kg body weight for type 1 patients, and 0.2 units/kg body weight in type 2 cases with oral medication. Even so, insulin dosage must be individually determined. Insulin is given 30 to 45 minutes before food, and sometimes before stressful activities. Diurnal blood glucose record for each individual helps in selecting the type of insulin and the dosage. Newer patient friendly injection devices are now available.

Follow-up Schedule

Blood glucose test (self-monitored)	Before meals and bed time
Medical check-up, growth, diet and drug review	Every 3 to 4 months
HbA_{1C} test	Every 3 months
Eye check for retinopathy	Annual after 5 years of diabetes
Urine test for microalbuminuria	Annual after 5 years of diabetes
Lipid profile	Annual

Self-monitoring

The easiest check someone can do at home is a urine test. However, urine testing is not an accurate reflection of blood glucose. Certain drugs and vitamin C interfere with urine test results. It is more accurate to measure blood glucose directly. The clinic or a laboratory can

measure blood glucose according to the specified follow-up schedule. However, blood glucose levels change from hour to hour, and diabetics need to take control by constantly monitoring their blood-sugar level and playing an active role in managing their diabetes. As a learning, diabetics could measure their blood glucose just before, and two hours after their favourite *forbidden* food. The response is both startling and instructive to the patient. Self-monitoring of blood glucose records the body's response to meals, exercise, stress, and medication. Children and adolescents may also learn self-monitoring of blood glucose.

Clinic Monitoring

All diabetic subjects must undergo regular physical and laboratory examination. Medical check-up should include the feet, skin, retina, and cardiovascular, renal, and neurological systems. This is also the right occasion to review the personal blood sugar record, critically evaluate pre-meal and post-prandial blood glucose levels, body mass index, diet, exercise programme, and in young patients their growth. Women may need a gynecology review.

Glycosylated hemoglobin (HbA1C) measures the glucose bound to hemoglobin. The bound glucose remains in the conjugated state until the blood cells die and new ones replace them. Therefore, HbA1C reveals the status of long term glucose control. Patients who report fasting glucose levels persistently below 115 mg/dL (6.4 mmol/L) and yet have HbA1C levels above 7 % may exhibit substantial post-prandial hyperglycemia. When the mean level of HbA1C declines to about 7 per cent, the incidence, onset, and progression of complications reduce by 50 to 80 per cent.

Iatrogenic hypoglycemia events require careful adjustment of medication. This is more critical in patients whose blood glucose levels often fall below 70 to 80 mg/dL (3.9 to 4.5 mmol/L) before breakfast, or during exercise, or with alcohol consumption, or with delayed meals. Bed-time and pre-breakfast glucose measurements are very sensitive monitors in hypoglycemia prevention programmes.

Patient Management Algorithm