

Child Health Watch

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Although diabetes is a common and well known disease in adults, many people do not realise that it can affect children. Diabetes is known to cause many problems in childhood and is associated with severe long-term complications with effects on many organs.

For many people, the commonly held belief is that diabetes mellitus is a disease of middle and old age. It is generally thought that this disease affects fat and overweight adults. It may come as a complete surprise that it could occur in children as well. All types of diabetes are known to occur in children and to compound matters further, there is a documented increase in the incidence of the disease worldwide. It is now thought to assume the proportions of a global epidemic. This "mother of all diseases" is also one of the more important chronic diseases of childhood. It is called the "mother of all diseases" because if left undetected or untreated in childhood, it can lead to many life-threatening complications. These complications are known to affect many organs and the risk of falling victim to these complications is even higher when the child develops diabetes at a younger age.

The human body is specifically geared to control the level of sugar in the blood and maintain it within certain rigidly imposed normal limits. There are several finely tuned sophisticated mechanisms that control the blood glucose or blood sugar levels. One of these mechanisms, which specifically promotes the utilisation of blood glucose by the tissues and thus cause it to be brought down, is the hormone insulin which is secreted by a specialised set of cells in the pancreas. Whenever the blood sugar level goes up, there is immediate reciprocal increased secretion of insulin to bring it down. Diabetes mellitus is a group of diseases characterised by high levels of glucose in the blood resulting from a defect in insulin production, a flaw in insulin action, or both.

There are two types of diabetes. These differ in several aspects too. Type 1 diabetes, which was earlier labelled as insulin-dependent or childhood-onset diabetes, occurs when the specialised cells of the pancreas which secrete insulin, are systematically destroyed. In a large proportion of cases this destruction is induced by a poorly understood immune mechanism. Type 2 diabetes on the other hand, which was formerly called non-insulin-dependent or adult-onset diabetes, is characterised by a general resistance of the tissues to the action of insulin. In this case however much of insulin is produced by the pancreas, the hormone is not allowed to exert its optimal effect in reducing the blood sugar levels.

Both types of diabetes can occur in children of any age, including toddlers and infants. The most worrying



Childhood diabetes

aspect of the current scenario is that the number of children afflicted with this global epidemic is on the rise. The International Diabetes Federation (IDF) estimates that each year, 65,000 children under the age of 15 develop Type 1 diabetes worldwide. Studies have shown that Type 1 diabetes is growing by three per cent among children and adolescents and by five per cent among pre-school children. Of the estimated total of 430,000 prevalent cases of Type 1 diabetes in childhood, more than a quarter come from South East Asia. In addition, owing to the global rise of childhood obesity and physical inactivity, Type 2 diabetes has also become much more widespread among children in developed and developing countries. Gender plays a role as well, with girls being more prone to Type 2 diabetes than boys. In the multifaceted global scenario of the disease, Type 2 diabetes which was once regarded as an adult disease, is today increasing at a disturbing rate among children and adolescents. According to the IDF, the number of children with Type 2 diabetes in Japan has doubled over a period of 20 years. In that country, Type 2 disease is now commoner than Type 1 diabetes. This tendency is not just limited to Japan as childhood Type 2 diabetes has become the main kind in many parts of the world.

Till quite recently, perhaps up to just a couple of decades ago, the frequently found type of diabetes in children was Type 1 diabetes. This type was generally fatal without the administration of insulin. The underlying immunological processes that lead to this type of diabetes possibly started long before the disease showed itself. The symptoms appeared when most of the beta cells that secrete insulin in the pancreas were destroyed. Early symptoms, which are mainly due to increased levels of blood sugar include increased thirst and urination, constant hunger, weight loss, and blurred vision. General tiredness would also be

seen. As glucose utilisation is drastically reduced due to the lack of insulin, the body starts to use up fats for its energy needs. The breaking down of fat produces chemicals that are known as ketoacids which have deleterious effects on most tissues. When this situation worsens one gets into the state of diabetic ketoacidosis which is a life-threatening complication. It needs urgent treatment as mortality without optimal management is quite considerable.

Most children with Type 2 diabetes have a family history of the disease. It has been shown that at least 75 per cent of children with Type 2 diabetes have a parent, brother or sister with the disease. The first stage in the development of Type 2 diabetes is often insulin resistance, requiring increasing amounts of insulin to be produced by the pancreas to control blood glucose levels. Initially, the pancreas responds by producing more insulin, but after several years, insulin production may decrease and diabetes develops. Thus the onset is gradual and insidious.

It is now known that Type 2 diabetes is related to being overweight, obese and inactive. With the life-style changes that have been brought about by current living standards, Type 2 diabetes is occurring more often in young people. The increased incidence of Type 2 diabetes in youth is a "first consequence" of the obesity epidemic among young people. It is a significant and growing public health problem all over the world. Overweight and obese children are at increased risk for developing Type 2 diabetes during childhood, adolescence, and later on in life. Type 2 disease shows symptoms that are similar to those of Type 1 diabetes. However, some children or adolescents with Type 2 diabetes may show no symptoms at all when they are diagnosed.

While for the most part it is easy to determine if a child or teenager has

Type 1 or Type 2 diabetes, some teens have elements of both kinds of diabetes. This phenomenon may be called "hybrid" or "mixed" diabetes. It is not surprising that some youth have elements of both Type 1 and Type 2 diabetes, given the fact that more children are becoming overweight and obese. Youth with "hybrid" diabetes are likely to have both insulin resistance that is associated with obesity and Type 2 diabetes, and antibodies against the pancreatic islet cells that are associated with autoimmunity and Type 1 diabetes.

Undiagnosed Type 2 diabetes in children and adolescents may place these young people at early risk for cardiovascular disease. No definitive data are available on the exact magnitude of this problem. In adults, up to 25% of individuals who have Type 2 diabetes are undiagnosed and at risk for microvascular and macrovascular complications of diabetes. It is important, therefore, for health care providers to consider testing for diabetes in high risk or symptomatic children. It is pertinent here to note that adult screening programmes identify more people with diabetes than do equivalent screening programs in youth.

All types of diabetes have major complications on a long-term basis. The disease causes certain changes to occur in the blood vessels including the tiny micro vessels that supply the tissues of different organs. The end result is many different types of ultimate organ failure. The best known of these is renal failure that results from irreparable damage to the kidneys.

The principles of Type 1 diabetes management include insulin administration, nutrition management, physical activity, blood glucose testing and avoidance of low blood sugar states. Children receiving fixed insulin doses of intermediate and rapid-acting insulin must have food given at the

time of peak action of the insulin. Children receiving a long-acting insulin analogue or using an insulin pump receive a rapid-acting insulin analogue just before meals, with the amount of pre-meal insulin based on carbohydrate content of the meal using an insulin:carbohydrate ratio and a correction scale for hyperglycemia. Further adjustment of insulin or food intake may be made based on anticipation of special circumstances such as increased exercise and intercurrent illnesses.

The treatment of Type 2 diabetes involves nutrition management, increased physical activity and blood glucose testing. If these initial steps are not able to normalize blood glucose levels then secondary forms of treatment with certain medications would be needed. There are a number of different diabetes medications, some that are taken orally and some taken by injection. Children with Type 2 diabetes may need to take one or more different glucose-lowering medications.

There is no common single formula to manage diabetes that fits all children. Blood glucose targets, frequency of blood glucose testing, type, dose and frequency of insulin, use of insulin injections with a syringe or a pen or pump, use of oral glucose-lowering medication and details of nutrition management all may vary among individuals. A doctor may determine the best regime that is suitable for an individual diabetic child. For children and teens at risk, health care professionals can encourage, support, and educate the entire family to make lifestyle changes that may delay or lower the risk for the onset of Type 2 diabetes. Such lifestyle changes include keeping at a healthy weight and staying active.

Diabetes also affects children mentally and physically even more than adults. Their general life-styles are disrupted by the need for medication and having to watch their diet and physical activity. They also need to monitor their blood glucose level from time to time, leaving them often unable to indulge in the many childhood activities enjoyed by their friends.

In the developing world, with limited facilities and general low income status, optimal management of childhood diabetes can be quite a problem. However, it must be stressed that children with any form of diabetes are regularly checked for adequacy of control of the disease and for development of the known complications. Such problems could occur in many organs and their eyes, kidneys, heart and the brain should be regularly checked at intervals for the development of these untoward effects of the disease.

Although there are no definitive and effective ways to prevent Type 1 diabetes at present, it is heartening to know that Type 2 diabetes can be prevented or delayed. All that needs to be done is to help the children to lead healthy lifestyles, encourage them to watch their weight, entice them to eat healthy food, make sure that they are physically active and get sufficient exercise. In the hustle and bustle of modern life and the competitive world that we live in, these are easier said than done. However, every effort made towards such endeavours would reap rich dividends in the long run. ■

The writer would appreciate some feedback from the readers. Please e-mail him at bjcp@sltnet.lk

Dr. N. M. Perera: a politician ahead of his times

by Walter Wijenayake

Nanayakkarpapathirige Martin Perera, or the late Dr. N. M. Perera, an intellectual, a renowned economist, a Trotskyite, a trade union leader who steadfastly fought to advance the interests of the working class, a freedom fighter in South Asia, a cricketer, statesman, political legend, an icon of Ananda College, a mayor, a Member of Parliament and a minister, breathed his last on August 14, 1979, exactly 30 years ago today.

As a politician in post-independence Sri Lanka, he proved to be an able administrator - as a mayor of Colombo and as Minister of Finance of Sri Lanka. As the Minister of Finance, he viewed the battle against underdevelopment in his own country as part of the wider battles of the Third World to complete political liberation by economic development so that their peoples could enjoy the benefits of freedom through

satisfaction of their material and non-material needs.

Above all, he was a statesman and a politician who stood by his principles and did not change them to gain political mileage. He set himself against narrow chauvinism and spoke for the rights of all - majorities and minorities.

He was born on June 05, 1905 at No: 36, St. Joseph's Street, Grandpass, Colombo, to the family of Abraham Perera and Johana Perera of Grandpass. However, his father was from Hendela.

He was the fifth in a family of nine. Two of the nine, the fourth a boy and the eighth, a girl, died in infancy. Of the seven that survived, five were boys and two were girls. The sixth and ninth were girls.

He would have been 104 years old today, if he had been alive. One of the most charismatic politicians of his generation, N. M. Perera was the first Leader of the Opposition in Sri Lanka, the leader of the Lanka Samasamaja

Party and twice Finance Minister. A BSc, DA DSc and PhD (London) of the London School of Economics, he was a pupil of the legendary Prof. Harold J. Laski who said that he had all the qualities needed of a Chancellor of the English Exchequer. From the Ranks of Tuscany came even bigger praise. Sir Ivor Jennings, Vice Chancellor of the Ceylon University said that he had all the qualities required of a Labour Prime Minister in Britain. He was both an economist and a political scientist and his analysis of the present constitution during his last years remains unrivalled for its sharp insights. A clear, concise and cogent debater, he was the consummate politician.

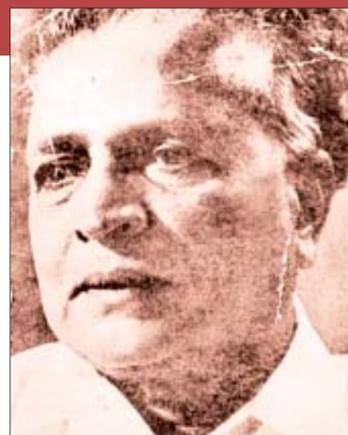
As a small boy he first studied the Sinhala language in the vernacular section of the St. Joseph's School. After one year he was shifted to the English section which was in the adjoining building.

The high priest of Vidyalkankara

Pirivena, Rev. Dharmarama Thera, taught him the Sinhala alphabet. On the first day his mother Johana Perera made him to offer the customary 'Bulath Hurulla' and pay his obeisance to the high priest. This boy was given tuition in the English language by an old fashioned school master, Mr. Gunawardena.

He was then admitted to the branch school of St. Thomas' College which was known as Cathedral Boys' School, Mutwal. In 1919 he was admitted to St. Thomas' College, Mount Lavinia. In 1922 he proceeded to Ananda College to further his studies.

Leaving this Buddhist institution he entered the University College, Colombo, which was then preparing students for London University degrees and after his BSc he left for the United Kingdom to join the London School of Economics, where, as a pupil of the legendary Professor Laski, he excelled in his academic work, acquiring a PhD and a DCs. Dr. N. M. Perera at the time was



the only person to hold the degree of Doctor of Science. He was awarded the PhD degree for his thesis on the constitution of the German Weimar Republic.

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