KNOW THE TRUTH ABOUT DIABETES

The number of diabetic patients is increasing very sharply in Bangladesh along with other countries of south-east Asia. Diabetes rises steeply also in all western countries. About 5 per cent of the population are diagnosed as having diabetes and many more are not yet aware that they have it. It increases at a rate of about 6 per cent per year, with this the number of diabetics in a country doubles in about 15 years.

If you did not develop diabetes as a child or adolescent, you will have another chance to become diabetic when you are over forty. In younger years we contract insulin-dependent or type I diabetes and in older years type II diabetes with sufficient insulin but with increasing inability to use it for blood sugar regulation. However, now a new form of diabetes is emerging called type 3 diabetes combining the traits of type 1 and type 2 diabetes.

Diabetes is commonly regarded as incurable and all effort is directed at controlling or managing it. However, I believe not only that most cases are curable but that early diabetes 1 and all diabetes 2 are relatively easy to cure with a suitable diet. In other words, drastic diet changes are required to adopt as much as possible a more natural diet. For some this is easy and a small price to pay for regaining health, while for others it is not worth living without their favourite foods, and for these the accepted medical treatment will be best.

Types 1 and 2 diabetes are commonly regarded as two different diseases. Both types are medically called diabetes mellitus or 'honey diabetes' from its most obvious symptom, a honey-sweet urine. In type 1 diabetes the insulin-producing beta cells in the pancreas are increasingly destroyed, while insulin production remains more or less normal with type 2 diabetes, although sometimes insulin release into the bloodstream is blocked by a tumour of the pancreas. The problem is increasing resistance to the insulin present in the blood.

The discovery of insulin in 1922 was hailed as the saving grace for diabetics. Insulin is a hormone released by the pancreas in response to a rising blood sugar level. It

is required to channel glucose into muscle cells for energy production. The liver and brain, on the other hand, can function without insulin.

To test for diabetes a glucose tolerance test is performed with 100 g of glucose in 300 ml of water ingested after an overnight fast. Normally fasting glucose levels are 70-100 mg/100 ml of blood or 3.9-5.6 mmol/l, and one hour after a meal or a glucose load less than 160 mg/ml or 9.0 mmol/l. Measurements expressed in mmol/l have in recent years replaced the earlier mg/100 ml. If test results are considerably higher than normal, diabetes is diagnosed.

The most obvious effect of abnormally high blood sugar levels is the discharge of glucose with the urine. This leads to frequent urination that then requires much drinking to replace the lost fluids. The muscles are starved of energy and that causes fatigue and eventually shrinking of the muscles as their proteins are increasingly used for energy production. This is the picture of the untreated type I diabetic.

The type 2 diabetic, in contrast, tends to be overweight or obese. This is because the high insulin levels, unable to channel glucose into muscle cells, now convert glucose into fat and cholesterol. The result is not only obesity, but also atherosclerosis with heart disease, poor blood circulation in the legs and eye diseases. While the medical treatment of type 1 diabetes is with insulin injections, type 2 diabetics commonly use glucose-lowering drugs.

However, all is not well with these medical treatments. You might naively assume that diabetes death rates were greatly reduced after the introduction of insulin in the mid 1920s, but that was not so. Before insulin treatment became widespread in England the death rate per 1 million of the population between 1920 and 1925 varied from 100-119.

In the years after the introduction of insulin the death rate started climbing each year from 115 in 1926 to 145 in 1931. There are several explanations for this seeming paradox. Formerly diabetics were treated with a reasonably effective diet high in legumes and low in sugars and starches. With the advent of insulin this

traditional diet was discarded and patients could now eat anything they liked with unfortunate long-term consequences.

Another factor is the toxicity of injected insulin. All diabetics develop immune reactions against injected insulin and may become more or less allergic against it. Life-threatening reactions are now rare but were more common with the impure products used initially. Presently a new danger arises because the animal-based insulin is being phased out in favour of synthetic human insulin. While this is an advantage for some, others who become allergic against it have no alternative medication.

Furthermore, insulin injections carry the danger of causing insulin shock with coma from extremely low blood sugar levels. However, the main reason for the increasing death rate in recent years is most likely the steady increase in the incidence of both types of diabetes, combined with the devastating effects of the medical treatment. In both types most of the damage comes from high amounts of glucose being converted into saturated fats and cholesterol. In type 1 diabetics this is due to injecting increasing or high amounts of insulin in combination with a diet high in carbohydrates, while in type 2 diabetics the already high fat production may be further increased by glucose-lowering drugs. The treatment for both types converges in the development of type 3-diabetes in which type 1 diabetics become increasingly insulin-resistant, and type 2 diabetics exhaust the insulin-producing capacity of their pancreas.

In order to find effective treatments, we must look at the basic causes of this disease, which of course are different for both types.

Destroyed Beta Cells

The main factor in type 1 diabetes is clearly the destruction of the insulin-producing beta cells in the pancreas, which is due to an inflammatory autoimmune reaction. Diabetes may manifest only after 90 per cent of the beta cells have been destroyed. The reason for this abnormal immune response is not well understood in medical circles.

Nevertheless, there are several important clues. Food allergy is one of them, dysbiosis or overgrowth of the intestines with pathogenic microbes another, while a third clue is vitamin B6 deficiency.

The diabetic pancreas shows a greatly increased number of white blood cells of a type associated with allergies. When type I diabetics are fasted in an appropriate way, their blood sugar levels often return to normal and may remain normal as long as only selected non-allergenic foods are used. With other foods, however, blood sugar levels may immediately go very high.

However, the question remains why an allergic reaction targets specifically the pancreas when usually other types of allergic reactions occur. It is here that the other two clues may provide the answer. When the normal protective gut bacteria are under stress, pathogenic microbes will take over. This is now very common but usually they remain further down towards the large intestine. Should they, however, invade the duodenum, the upper part of the small intestine, then pancreatitis or inflammation of the pancreas may result. This has been demonstrated experimentally. It is not even necessary for microbes to invade the pancreas itself as their breakdown products or endotoxins do most of the damage.

Clearly, a low-grade chronic inflammation of the pancreas makes it a primary target organ for any allergic reaction. Alternatively or in addition, vitamin B6 deficiency has been shown to damage the insulin-producing beta cells.

Even with a mild vitamin B6 deficiency, the amino acid tryptophan cannot be properly metabolised, part of which is normally converted to niacin or nicotinamide. Instead, an abnormal metabolite, xanthurenic acid, accumulates. High levels of this have been shown in animal experiments to damage the beta cells and within days such animals developed diabetes. The sooner the missing vitamin was supplied in high doses, the easier the blood sugar regulation could be normalised again.

Individuals who are even mildly deficient in vitamin B6 excrete xanthurenic acid in the urine. This is used as a laboratory test for vitamin B6 deficiency. Insulin-dependent diabetics generally excrete large amounts of xanthurenic acid, especially those with retinopathies (damaged retina). Magnesium and zinc supplements

reduce the formation of xanthurenic acid. Both minerals are deficient in diabetics. A study found the diabetes death rate four times higher in areas with low water magnesium levels than in high magnesium areas.

Another interesting facet is that high doses of nicotinamide can postpone the need for insulin injections in newly diagnosed type I diabetics for months and even years. The explanation: a high level of this B vitamin in the blood inhibits the formation of xanthurenic acid from tryptophan in addition to protecting beta cells from autoimmune attack.

However, now comes the really important bit of information that ties together all of the foregoing parts. A study of several hundred newly diagnosed diabetic children revealed an immune response to a fragment of cows' milk protein in all of them. What is more, this protein fragment has the same composition as one called P69 on the beta cells.

Juvenile diabetes is much higher in those who have been bottle-fed rather than breast-fed, and it is lower in communities that consume fewer cows' milk products. However, it appears that this protein fragment is only a problem with milk from Friesian cows (called A1 milk) but not with milk from other, lower-yielding, breeds that produce A2 milk. Most of presently consumed milk is A1 milk.

P69 is usually protected inside the beta cells and comes only to the surface during microbial and especially viral infections. At that time the immune system can mistake it for cows' milk protein, attack it, and destroy the beta cell in the process. The problem is that bottle-fed infants are very susceptible to colds, respiratory and gastrointestinal infections. It is regarded as normal for them to have six and more infections a year, while these are rare with breast-fed infants.

But it does not end there. Bottle-fed infants also frequently receive antibiotics that then encourage overgrowth of the intestines with undesirable microbes, and a tendency to chronic pancreatitis. One type of E. coli bacteria is harmless in the large intestines but it has the potential for causing great damage in the small intestine. That is because it produces a molecule that is very similar to insulin.

When the immune system becomes activated against this molecule, it may then also direct its attack against related features at the beta cells.

This shows that a combination of two factors is required to trigger an attack on the insulin-producing beta cells: one factor that brings P69 to the surface of the beta cells, and another factor that activates the immune system to attack them. As the first factor we may have high concentrations of xanthurenic acid or frequent colds of bottle-fed babies, and if antibiotics are used, then this also promotes overgrowth of the small intestines with pathogenic microbes, including E. coli as the second factor. This is reinforced when ingesting cow's milk, which intensifies the attack on the beta cells.

More recently it has also been shown that an autoimmune attack on the pancreas can be triggered by a "leaky gut" or increased intestinal permeability. This has been shown to be triggered by gluten ingestion, especially from wheat.

Nitrosamine is a chemical especially high in preserved small goods, but it may also be formed from the high nitrate content of chemically fertilised produce. A significant association between nitrosamine and type I diabetes has been found, although it may only act indirectly by causing dysbiosis like so many other chemicals.

The great majority of diabetics have type 2-diabetes. It used to be called maturity-onset diabetes because it commonly started after the age of forty. However, now it is also common in overweight children. It is mainly due to the reduced effectiveness of otherwise normal levels of insulin. Type 2 diabetics are generally treated with tablets to lower blood glucose levels.

As with insulin, also these hypoglycaemic drugs do not protect the patients against the various harmful effects of long-term diabetes. These include degenerative eye changes especially involving the retina, degeneration of the peripheral nervous system and atherosclerosis especially affecting the legs and heart. On the contrary, studies seem to indicate that these drugs accelerate such degenerative changes.

From a biochemical point of view this is only logical and to be expected because if sugar levels are lowered without converting them into energy, then they will be converted into fat and cholesterol that then cause many of these problems.

When the liver and bloodstream are already loaded with lipids then it is difficult to convert excess glucose into more lipids. Therefore, obese or overweight individuals have greatly decreased insulin sensitivity, while insulin becomes much more effective if they lose weight. Other studies show that the blood sugar regulation is best maintained with a diet high in vegetable fibre, especially from legumes, while a high intake of simple carbohydrates or sugars tends to make insulin less sensitive.

Sugar added to the diet of research animals or increased in the diet of healthy volunteers has been reported to disturb the glucose metabolism and cause diseases of the eyes, kidneys and blood vessels. Even if combined with a high-fibre low-fat diet, added sugar still adversely affects the glucose tolerance.

However, short-term studies may not show the harmful long-term effects of sugar in the development of type 2 diabetes. This is because household sugar or sucrose consists of one molecule of glucose and fructose. Only glucose elevates the sugar level in the normal way while fructose affects it only slightly. Therefore, in the glycaemic index, which measures the effect of different foods on the blood glucose level, sucrose is listed as a good food.

Instead, the danger of fructose lies in causing an exaggerated insulin response, mainly when it is together with glucose in the same meal, be it from sucrose, honey or even starches, but to some degree even when ingested on its own as a sweetener. However, fructose in whole fruits is generally fine, provided it is not ingested close to a meal containing starches.

Lets look at the common habit of eating sweetened starches as in bread with jam, marmalade or honey, cakes, biscuits, muesli or breakfast cereals. The fructose contained in the meal causes a strong rise in the blood insulin level. At the same time a large amount of glucose from the breakdown of starches enters the bloodstream. The excess of insulin quickly channels the glucose inside muscle cells, which are now overloaded with glucose. Only a small amount is needed for energy

production, the rest may be converted to lactic acid, causing overacidity, or to body fat. Gradually cells learn to protect themselves by becoming less responsive to insulin and making it harder for glucose to enter.

Until 1980 the rate of obesity and type 2 diabetes was fairly stable. However, when the health authorities in the U.S.A. started vilifying foods containing fats and cholesterol and recommend eating carbohydrates instead, obesity increased from 13 to 14% of the adult U.S. population to 25% within one decade and continues to rise. Type 2 diabetes became an epidemic as well. In addition, for the first time in history a large number of obese children developed type 2 diabetes. Since then it is no longer called maturity-onset diabetes.

While an exaggerated insulin response and resulting loss of insulin sensitivity is most pronounced in obese individuals, it gradually develops also in others after prolonged use of sucrose. The damage is the greater the more sucrose is eaten in a gorging pattern instead of in small, spaced out meals.

Surprisingly, sucrose has a worse effect than eating its two components, glucose and fructose, at the same meal. This is called the 'disaccharide effect' and applies also to other sugars with two components, such as maltose with two glucose molecules. A hormone in the duodenum (G.P.I.) releases more insulin after ingestion of disaccharides than after monosaccharides, such as glucose or fructose.

While naturally increased insulin levels are desirable for type I diabetics, with type II diabetes they just mean more glucose is converted into fat and cholesterol. However, there is a way to increase insulin sensitivity of muscle cells naturally - with regular aerobic exercise.

Stress causes the diabetic blood sugar regulation to deteriorate. The reason for this is the release of additional adrenalin as a fight or flight response and this counteracts the action of insulin. More adrenalin means higher blood sugar levels.

While we are usually aware of external stress, be they work related or caused by marriage and other relationships, by noise or heat, we are also exposed to many

hidden stresses. The most common form of hidden stress is probably food allergy and chemical sensitivity, but it may also simply be a vitamin or mineral deficiency, electromagnetic stress or any kind of worry or resentment.

WHAT TO DO

I regard type 2-diabetes as one of the easiest conditions to cure, at least for those who are happy to adopt a more natural diet. With this I mean that the blood sugar regulation can easily be normalised. It is, of course, more difficult to reverse the degenerated conditions of the eyes, blood vessels and other organs.

In such cases I just concentrate on the degenerative condition, and the blood sugar regulation will come right on its own. As an example I may mention an elderly lady with failing eyesight and approaching blindness. She was on blood sugar lowering drugs. In this case I recommended high doses of the vitamins and minerals required for her eye condition, in addition to a non-sweet, low-grain diet. Within three weeks she had no more problems with her blood sugar regulation, and her eyesight was greatly improved.

One mineral that is important for all type 2 diabetics is chromium. That is because chromium works closely together with insulin to channel glucose into cells. The higher the insulin blood level, the higher is also the chromium level. This causes increased loss of chromium with the urine after sweet meals. In some studies 50 percent of diabetics improved with additional chromium. Deficiency of chromium also raises lipid levels in the blood, thereby increasing the risk of atherosclerosis. Western diets are generally very low in chromium, 85 per cent for instance are lost when making white flour.

The key to the successful treatment of both types of diabetes is a diet low in sugars and starches. Legumes, sprouted and cooked, are the best form of carbohydrates. Besides avoiding or minimising the indicated causes of both types of diabetes, the diet should include a high amount of citric acid in order to eliminate the fatty deposits in blood vessels and other inappropriate places. Most of the damage of diabetes is caused by an oversupply of both glucose and insulin, which then leads to the overproduction of saturated fat and cholesterol.

Citric acid reacts with fatty acids to produce energy. As long as they have enough fat, diabetics can easily live on lemon juice. This is not fanciful as basically all of our food is internally converted into citric acid before it is converted into energy. However, to convert citric acid completely into energy, it needs to react with the breakdown products of fatty acids, see The Cellular Energy Metabolism for a diagram of this process. The late Dr Carey Reams reputedly cured thousands of diabetics of both types with a 3-week lemon juice fast. Every hour or ten times daily patients would drink a glassful with one part of lemon juice and 9 parts of water, followed after 3 weeks by an allergy-tested natural diet.

It is regrettable that it is so difficult in our society to make diabetics aware that a nutritional alternative to drug treatment exists. Nevertheless, the good news is that it can be done; diabetes can be overcome, not just managed. It is up to each individual diabetic to try this way.

Of course, it is much easier to prevent diabetes than to cure it. Here are some simple steps to minimise the likelihood of developing diabetes:

- Minimise the intake of cows' milk protein, especially with infants.
- Avoid gluten with infants and minimise its use later in life.
- If you cannot breast-feed use goats' milk and almond milk instead (with the addition of cod liver oil and acidophilus/bifido cultures).
- Check for signs of vitamin B6 deficiency, or just give your children a low-potency multivitamin supplement.
- Take antibiotics only in serious conditions together with a fungicide (e.g. garlic) and plenty of live cultures of lactobacilli.
- Use only a minimum of sweeteners and sweet fruit juice; eat whole fruit instead for sweetness.
- Control your weight by eating your food predominantly raw, use mainly fresh fruit and vegetables, and minimise grain-based food.
- Improve your lifestyle: regularly exercise, and learn meditation or deep relaxation.