

Coping With Diabetes Mellitus

Poorly controlled diabetes can be dangerous

by Prof. Habibuz Zaman

(This is the second of a series of three articles on diabetes mellitus.)

YOU are only 28. For the past several weeks, you have been feeling out of sorts, lazy, in fact weak. You have been passing urine several more times, especially at night, than ever before. You have been feeling thirsty and hungry. You are drinking plenty of water and eating a lot more than usual. Even then you keep feeling thirsty and hungry. Instead of gaining, you seem to be losing weight. You have also developed some itching of the skin, and a few boils (furuncles) have also cropped up.

Your physician recognizes you have the classic symptoms of diabetes mellitus. The urine contains sugar (4+) and the blood glucose level is very much raised. These tests are repeated and almost the same results are obtained.

The doctor treats you initially with control of your diet. He asks you to altogether stop taking refined sugar and all kinds of sweets and confectioneries. He plans your diet so that about 50 per cent of your food is represented by carbohydrates and the remainder by proteins and fats. He asks you to divide equally the entire carbohydrate intake into the three main meals and two small snacks. He also reduces your total food intake by one third. He follows you for two weeks. Although the level of blood sugar has been reduced slightly, it is still quite high. He puts you on oral medicines (oral hypoglycaemics) to reduce your blood sugar level. Another two weeks are gone — but the blood sugar has not come down to normal levels as yet. You have also been walking for about 40 minutes daily.

Now he prescribes regular (fast acting) insulin to be taken before breakfast by injection underneath the skin. The result is dramatic. Urine sample, collected two hours after breakfast, is free of sugar, and the corresponding blood sugar level is normal. Within another two weeks the doctor, with your active cooperation, has

worked out a scheme of urine and blood sugar estimations. Insulin injections and diet control for you. He has concluded that you are a case of insulin-dependent diabetes mellitus (IDDM). This means you will require treatment with injections of insulin for the rest of your life. There is no cure for diabetes mellitus — none as of today!

Normally enough insulin is secreted by the Beta (B) cells of the islets of Langerhans of the pancreas to take care of the requirements for the utilization of glucose in the tissues and cells of the body. In IDDM there is some damage to the B cells of the islets, so that not enough insulin is produced. As a result, glucose accumulates in the blood and high levels are reached (hyperglycaemia). If the IDDM patient keeps on taking his usual food, and perhaps also an excess of sugars and carbohydrates, a state of diabetic coma may be reached, when the blood glucose level exceeds 400 mg/100 ml blood (22.2 units). This condition is also known as ketoacidotic coma, because of the presence of ketone bodies in the blood (these are the acidic end products of the burning of fats for fuel for the requirements of the peripheral cells). This leads to a state of acidosis of the blood (normally the blood is mildly alkaline).

Diabetic coma is one of the most serious but avoidable complications of untreated or poorly treated diabetics. The patient in hyperglycaemic coma suffers from "air hunger," as seen by sighing and deep breathing; he also smells of acetone (a sweet smell) in his breath. Very energetic action has to be taken by the doctor to save a patient in diabetic coma. The diagnosis is made on finding very high levels of blood sugar (400 to 1000 mg or 22.2 to 55.5 units). With some luck, the patient's attendant may provide a history of poorly controlled diabetes, recent bouts of over-eating or of irregular insulin administration. On physical examination, the patient in diabetic coma appears severely dehydrated;

he has a weak and rapid pulse and low blood pressure. The patient is treated with a moderate dose of 20 units of regular insulin by intra-muscular or intravenous injection, followed by 4-6 units per hour thereafter, till a normal level of blood sugar is attained. Fluids have to be administered to restore the water, salt and electrolyte content of the blood. Reliable laboratory facilities are required for the frequent de-

• 1. Imagine the danger of flying with a pilot or riding a public transport (bus, train or taxi), driven by a diabetic under insulin treatment.

• 2. There is no cure for diabetes mellitus — none as of today.

• 3. Diabetics must not be engaged in occupations, which may cause serious hazard to themselves and also to others.

• 4. Patients, their immediate family members and co-workers of diabetics under insulin treatment must be aware of the hazard of hypoglycaemic coma (perilously low levels of blood sugar with coma).

terminations of the acid base status of the blood and the levels of the blood glucose, urea and electrolytes. In the event that the patient has to be removed to a better equipped medical centre, ketoacidosis may be partially corrected by the administration of saline (even table salt may be given with boiled water per rectum).

There is another complication associated with the insulin treatment of diabetes mellitus, which can also be pretty serious — hypoglycaemic coma. This occurs if an excessive dosage of insulin is taken, generally mistakenly by the patient. Or, if the body's re-

quirement for insulin has been reduced as a consequence of excessive physical exercise, or starvation for an unduly prolonged period. This point will be illustrated by recalling a recent case.

The party was on. The occasion: Ashfaq's third birthday. Daddy Halim had much to be happy about — his garment industry undertaking had been a great success! We were seated on folding chairs, around the terrace — at least 150 close relatives and friends. Kuti bhai was next to me. We were having a great time exchanging pleasantries, under a tastefully decorated shawlana.

Soft drinks had been passed around. I noticed Kuti bhai did not help himself to one. Dinner was quite late in being served. Finally it came — biryani and chicken roast, prepared by one of the most celebrated chefs in town. I had just had a few mouthfuls, and so had Kuti bhai. Then all of a sudden, something seemed to happen to him. First he lost grasp of his plate and then he suddenly went into convulsions and fell on his side. Since no one seemed to reckon as to what the matter was, Kuti bhai was hastily removed to a nearby hospital.

Laboratory test indicated that Kuti bhai had a very low level of blood sugar. With intravenous injection of a concentrated solution (50 per cent) of glucose, his consciousness was quickly restored. As the doctor had rightly suspected, Kuti bhai was a case of diabetes mellitus under insulin treatment. In fact, he had given himself a shot of insulin before coming to the party. Since he was several hours late in having his dinner, his blood sugar had fallen to a perilously low level. He had therefore developed what is called hypoglycaemic coma. This is a well known and a potentially serious complication of insulin treatment. Unrecognized and untreated, the patient may die or suffer permanent brain damage. Patients, their immediate family members and co-workers of diabetics under insulin treatment must be aware of this hazard and also

know how to recognize the condition soon and what action to take.

Not infrequently, cases of severe hypoglycaemia may speak incoherently, behave aggressively and also develop incoordination of movement; they have been charged mistakenly for drunkenness. Symptoms of hypoglycaemia are likely to set in with blood sugar levels below 2.5 units (mmol/litre) or 45 mg per 100 ml blood. These include hunger, weakness, palpitations, profuse sweating, irritability, confusion, unconsciousness and convulsions. Diagnosed early while the patient remains conscious, mild attacks can be corrected by the ingestion of plain sugar or glucose drinks. Diabetics on insulin treatment are well advised to carry with them lumps of sugar or packets of glucose (50 grams). Once unconsciousness has set in, the patient requires intravenous injection of glucose solution. This is supplemented by glucose drinks and food after the patient regains consciousness, since recurrences of these episodes are not unlikely to occur, specially in diabetics, who are on regular as well as intermediate acting insulin. Repeated episodes of hypoglycaemia indicates poor control of diabetes and calls for improved monitoring of the treatment.

Imagine the danger of flying with a pilot or riding a public transport (bus, train or taxi), driven by a diabetic under insulin treatment. No wonder airline pilots are required to undergo medical check-ups at frequent intervals. Can the same be said of the Road Transport bus drivers or the truck drivers plying on the highway? In their own interest, as also that of others, diabetics must not be engaged in occupations, which may cause serious hazard to others. No wonder Kuti bhai had not shared the information regarding his health status with many of his close relatives and friends. He had captained a passenger jet plane for many years until he was grounded recently!

Climate Change and Human Health

CLIMATE change could affect human health by disrupting food and fresh water supplies, displacing millions of people, and altering disease patterns in dangerous and unpredictable ways.

Human health could be affected by even quite small changes in average mean temperature, and there is the prospect of some major diseases flourishing in warmer conditions and of more resistant strains of infection emerging," noted the Commonwealth secretariat recently.

The populations most vulnerable to the negative impacts of global warming or the "greenhouse effect" are in developing countries, in the lower-income groups, residents of coastal lowlands and islands, those living in semi-arid grasslands, and the urban poor in the squatter settlements, slums and shantytowns of large cities.

Present strategies for immunization, coping with disease vectors or carriers, providing safe drinking water, and improving nutrition are all based on existing climate regimes, ecosystems, sea and solar radiation levels. These are all expected to change, but exactly how much cannot be predicted. It is, therefore, virtually impossible to adjust health and nutritional strategies to take account of possible climate changes.

Human can adapt to moderate changes in temperature and to occasional extremes. But this adaptive capacity is relatively low in infants and the elderly; it rises through childhood and adolescence to reach a maximum which can be maintained up to about 30 years of age. Currently, the temperature in Washington, D.C. exceeds 38°C on an average of one day per year; it rises above 32°C about 35 days every year. "But by the middle of the next century, these figures could rise to 12 and 85 days respectively per year", according to the World Meteorological Organization. "The effect of such temperature rises on human health in Washington and similar crisis throughout the world is difficult to predict. But there is no question that increased urban

heat stress could come to claim many lives".

A changing climate would alter the ecosystems of the vectors or agents which carry or cause many diseases, whether these be viruses, bacteria, parasites, plants, insects or other animals (mosquitoes, snails etc.). As the weather warms, the boundaries of the tropics may extend into the present subtropics, and parts of temperate areas may become subtropical. As air temperatures increase, some diseases will become common in regions which once rarely knew them. Death rates may also climb significantly. Bacterial, viral and parasitic diseases prevalent in tropical climates, such as those caused by the tetanus bacterium, will spread.

It is possible that warmer weather around the world will cause increases in summer diseases and decreases in those associated with winter. Diseases like hepatitis-B, epidemic cerebral meningitis, poliomyelitis, cholera and bacillary dysentery flourish in hot, humid weather.

In a warmer climate, mosquitoes and other vectors also may migrate vertically, up into highlands which were once too cold for them. This may be particularly hazardous in tropical highland areas where there is no natural resistance to malaria.

Changes in temperature, rainfall, humidity and storm patterns may affect diseases borne by vectors in tow ways. First, they will directly affect the vector's reproduction rate, biting rate, and the duration and frequency of human exposure. Second, they may modify agricultural systems or plant species, thus changing the relationship between host and vector.

Development rates of malarial mosquitoes, for example, increase with warmer temperatures, but these pests need wet areas in which to breed. The snail-borne disease schistosomiasis or bilharziasis is likely to increase if global warming forces increased irrigation or causes people to migrate towards irrigation projects. And changed human migration patterns, along with increased temperature and rainfall may extend the geo-

graphic range of hookworms.

A warm climate may also be more favourable for the propagation of air-borne and water-borne communicable diseases.

In the oceans, toxic "red tides" — which kill off marine life due to the proliferation of minute marine organisms called dinoflagellates — may become more frequent as temperatures rise and nutrients from agricultural fertilizers leach into rivers and coastal waters. This proliferation will disrupt marine food stocks and raise incidences of ciguatera poisoning, caused by eating tropical fish or shellfish which have consumed organisms that have ingested dinoflagellates.

Sea-level rise could also spread infectious disease by flooding sewerage and sanitation systems in coastal cities, and increase the incidence of diarrhoea in children. The flooding of hazardous waste dumps and sanitation systems could lead to long-term contamination of crop lands.

Rising seas may also disrupt marine habitats and aquatic food chains. Since fish constitute 40 per cent of all animal protein consumed by the people of Asia, such a disruption of the marine ecosystem would affect the food supplies of many millions of people and dramatically increase protein deficiency and malnutrition.

Some of the factors contributing significantly to global warming, such as the burning of fossil fuels and the use of chlorofluorocarbons (CFCs) and halons, threaten human health in other ways too. A typical petrol-driven motor car, for example, emits carbon monoxide, sulphur and nitrogen oxides, hydrocarbons, low-level ozone, and lead, all of which are hazardous to health. For their part, the ozone-depleting CFCs and halons also subject humans to increased risk of skin cancer, cataracts and lower immunity to other illnesses as a result of increased exposure to ultra violet B radiation from the sun.

Finally, changes in the availability of food and water as well as radical shifts in disease patterns could initiate large migrations of people, leading to overcrowding, social stress and instability.

Indonesia's Herbal Cure-All Heads for the Big Time

INDONESIA all but runs on jamu, a traditional medicine used as a cure-all throughout the archipelago. It is big business, and now it is being promoted as a major export to rival ginseng.

Jamu is made from ingredients from Indonesia's tropical forests — plants, grasses, minerals, fungi, roots, tree bark, parts of mammals, birds and reptiles. It comes as powders, pills, capsules, bean pods peas, flat seeds, teas, oils and creams.

A multiplicity of remedies is taken for hypertension, colds, "flu", bronchitis, hangovers, intestinal parasites, stomach aches, over-eating, skin diseases, rashes and pimples. The remedies can smooth wrinkled skin, put you to sleep, banish listlessness, backaches and sore bones. There is jamu for dizziness, bloodshot eyes, urinary tract infections, cancers, hernias and bad coughs.

Jamu outlets are found in every marketplace with tri-coloured stalls, painted like barbers' poles, displaying rows of brightly coloured packets, jars and small bottles. There are also shops, stocked as comprehensively as a sizeable chemist with herbal remedies of very description.

You don't need a prescription to order jamu. You simply tell the vendor what your complaint is and he'll administer the appropriate mixture. It could be some powder put into a liquid taken with some round pills and a glass of water. Some doses are given with an egg, wine, or tea. It often tastes bitter but may be served with a sweet drink or sweetmeat afterwards.

Jamu is cheap, costing an average US 25 cents a dose. A very common method of dispensing it is via the ubiquitous jamu ladies of Java who carry a rattan basket on their backs, loaded with bottles and powders.

Formerly they were the classic preparers and purveyors of a simple range of remedies. They still ply their trade and have a ready market. But jamu is also big business. It is made in factories and some of the bigger producers are combining scientific processes with traditional methods, looking for export markets and improving their packaging and marketing.

Indonesia, employing thousands. Its popularity within the country is increasing, surprisingly, given the ever-growing westernisation and standardisation of other areas of life. The number of jamu factories registered with the Indonesian Ministry of Health in 1975, both large and small scale, was 175. By 1989 the figure had doubled, excluding thousands of jamu manufacturers in the informal economy.

Mrs Mooryati Sudibyo, chairwoman of the Indonesian Association of Jamu manufacturers (GP Jamu) feels the time is ripe for Indonesia's

Jamu is Indonesia's answer to ginseng — a unique herbal medicine that is claimed to cure everything from cancers to aging skin. Unlike ginseng, however, jamu has not been promoted internationally. But all that is about to change. Gemini News Service reports on a gathering promotion to make Indonesia the world's leading producer of herbal medicine. by Stephen Carr

herbal medicine heritage to find a wider audience.

Jamu is already sold in the other ASEAN countries, Thailand, Malaysia, Singapore, Brunei and the Philippines, as well as in Japan and Taiwan. It has also appeared in the Netherlands and some other European countries. But, says Mrs Sudibyo: "Indonesia lags behind other Asian countries such as China, Korea, Thailand, Japan and Taiwan in promoting its natural herbal medicine abroad. That's why ginseng is more popular than jamu."

One effort to introduce jamu to the outside world will be by the Nusantara Jaya Foundation, a non-profit making organisation which is putting together the 20 month Festival of Indonesia in the United States.

It will stage in exhibition on jamu from August 1991 to January 1992. There will be posters, photographs, explanatory texts and samples of the medicine. There are literally hundreds

of jamu. Indonesians who know how to use them often take combinations of different varieties.

Javanese women for instance, who have had numerous children, look amazingly well preserved. They say it is because they take up to 10 jamu internally and externally over a period of 40 days after each delivery. The compounds remove excess blood from the body, they say, contract the uterine muscles, help them to slim, restore vigour and sex appeal.

There are men's jamu to

improve virility, and special potions for pedicab cyclists and others who do hard physical labour.

Jelok Temu is given to fortify year old babies. Women from 20 to 50 take Patmosari to remain youthful looking, to tighten the skin and revitalise themselves. Women over 40 and worried about losing weight take a special jamu that prevents them from becoming too thin.

The knowledge that goes into jamu preparation is hundreds of years old. It began as a secret herbal pharmacopoeia in the central Javanese courts of Surakarta and Yogyakarta.

The formulae that produce Lular paste, made from rice mixed with pulverised bark and flowers, however, has now long been in the public domain.

Its function is to slow wrinkling and the aging process of skin. Similarly Mangir, a yellow powder, is a common preparation applied to the skin

to make it clear and fragrant.

Some jamu deserve detailed scientific analysis because they are held to cure serious ailments. Gintjal, for example, is taken for inflamed appendix and its makers say it renders an operation unnecessary.

Kumis Kucing (cat's whisker plant) acts as a diuretic and can cure kidney stones or urinary tract infections. Tapak Dara (Vincea Alba/Rosea Linn) is effective for diabetes and hypertension. There are jamu for late menstruation or taken to ensure the cycle comes on time. The medicine is obviously very potent because it comes with a warning that it may cause abortions if the patient is one to two months pregnant. Young girls take Kokok after their monthly cycle to purify the blood and make the face and eyes bright again.

Mrs Sudibyo who owns one of the country's leading jamu factories feels that foreigners may be discouraged from trying Indonesian traditional medicine because they are not confident about quality control product and dosage standardisation, and possible unscientific preparation methods.

In Indonesia, one of the most populous nations on earth, 80 per cent of the people live in villages, remote and mountainous areas. For most of them there is no alternative to traditional medicine.

The government's national drug policy is that folk medicine should be used in mass social health care. It has a hand in the production and distribution of jamu.

The minerals, flora and fauna that make up the ingredients, as well as the knowledge that transforms them into effective curative agents are valuable assets whose potential is increasing with growing overseas interest in products. "I'm sure jamu has bright prospects" said Mrs Sudibyo "and that more and more people including those abroad will continue to use it."

She and her fellow producers are hoping that Indonesia will become the world's leading producer of herbal medicine. — GEMINI NEWS.

WHEN Tikuna tribal leader Pedro Inacio sent Brazil's health ministry a document in January warning of a cholera following a similar outbreak in Peru, his letter was apparently seen as just another report for the bureaucrats to file.

But Inacio knew what he was talking about.

The Tikunas have lived for centuries along the Solimoes river, the point in the Amazon river from which the dreaded epidemic has spread, washed downstream and leaving devastation in its wake.

The Tikuna people number some 25,000. A few have made their way to city hospitals where they have been diagnosed as having cholera.

This people, which has steadfastly fought for legal recognition of their lands, has managed to survive despite the almost complete lack of health, social and educational support from the government.

Tikuna lands are under permanent threat of invasion and exploitation by logging interests and other forest predators. That is why the Tikuna and other indigenous peoples regard the establishment of recognised territorial limits as a fundamental right.

The Portuguese who colonised Brazil found "lands as far as the eye could see". Indigenous lands were treated as if they had no owners.

Under Brazil's new constitution in 1988, the government is obliged to demarcate these lands, and it has until October 1993 to do so.

The tracing of the boundaries of indigenous lands serves to protect and defend the indigenous family, as well represents formal recognition of ancestral holdings.

The Tikunas depend for their food on one of the great Amazon rivers and its tributaries and, like these waters, they know no borders, even if the white man has divided them into lands called Brazil, Peru and Colombia.

Now cholera, the most feared modern-day plague, has arrived and with it, confirmation of the Tikuna leader's warning: the white man, with all his technological structures and progress, has not been able to halt the advance of the disease.

What the epidemic has shown is that the Tikuna lack the adequate level of medical attention recommended by the World Health Organisation (WHO). They have no clinic, not even a doctor. Their plight lays bare the fact that the government has no emergency mechanisms to extend aid to them or to other indigenous

Cholera Goes Down the Amazon

The cholera epidemic which broke out in Peru has now reached the Amazon, where it threatens to exterminate indigenous populations. Marcos Terena, leader of Brazil's Union of Indigenous Nations, writes that the threat to the Amazon tribes illustrates the historic neglect of the world's indigenous peoples.

At the beginning of the year, Brazil's indigenous communities presented the government with a project to create a general assistance network, directly linked with the office of the president.

They also called for the creation of new bodies to safeguard their cultural and recreational heritage, including defence of the environment, to inject a moral code into the National Indian Foundation (Funai) and strengthen defence of their rights.

They were ignored. Not only did the government maintain Funai despite its inefficiency, it also proceeded to strip the foundation of any power it had to defend indigenous interests.

The question of demarcating land boundaries passed to an inter-ministerial group, educational assistance was transferred to the education ministry and medical programmes came under the health ministry.

The problem is that these ministries are not familiar with the special characteristics of the different indigenous peoples, and their inefficiency is highlighted by the long queues outside hospitals and other community assistance centres.

The only time indigenous people receive attention or concern is when catastrophe strikes. This is the history of the Tupinamba, the Yanomami, the Kaiwas and, now, the Tikuna.

The whole world is showing its concern for environmental issues, with the future of the Amazon a number one concern. Yet here we are today, poised to watch the spread of an epidemic through the waters and winds of the Amazon, which started off decimating the peoples on the Pacific Coast and will probably cross the entire Amazon region before hitting the Atlantic coast.

The Amazon shelters indigenous peoples which have preserved their natural life-ways. These communities have preferred to organise themselves into small, agile groups that permits them to flee and avoid meeting the white man. That is why communities do not exceed 500 people, and even these groups are almost always subdivided into villages.

These indigenous people have no contact with whites, nor do they speak Western languages. But they will inevitably be affected by the same cholera that has frightened civilised man.

The region most threatened by cholera is home not only to the 25,000 Tikunas but also to some 5,000 other indigenous peoples — including members of the Marubo, Mattis, Kulina, Urubo, Mayoruna.

Apurinan, Jamamadi and Katukina tribes — used to living in complete isolation in the heart of the Amazon jungle. Only recently have they come into contact with whites.

NO EXCUSE...

HALF A MILLION WOMEN DIE EACH YEAR AS A RESULT OF PREGNANCY AND CHILDBIRTH.

BETWEEN 25 AND 40 PERCENT OF THESE MATERNAL DEATHS CAN BE PREVENTED IF WOMEN CAN CHOOSE TO AVOID UNWANTED OR POORLY PLANNED PREGNANCIES.

IN MANY CASES, THEY CANNOT MAKE THAT CHOICE.

PART OF THE PROBLEM IS THAT, IN COUNTRIES WHERE WOMEN'S STATUS IS LOW, THEY ARE CONSIDERED EXPENDABLE. LITTLE ATTENTION IS GIVEN TO THEIR HEALTH OR THEIR NUTRITION.

MATERNAL AND CHILD HEALTH SERVICES ARE THE MOST IMPORTANT CHANNELS FOR FAMILY PLANNING, AND YET THEY TYPICALLY GET LOW PRIORITY IN NATIONAL BUDGETS.

IN A VERY REAL SENSE, THE LACK OF HEALTH SERVICES FOR WOMEN OBTAIN OBSTRUCTS THE RIGHT TO FAMILY PLANNING.

PSI - II **DEPTHnews**