agMOOCs

Diet in Diabetes

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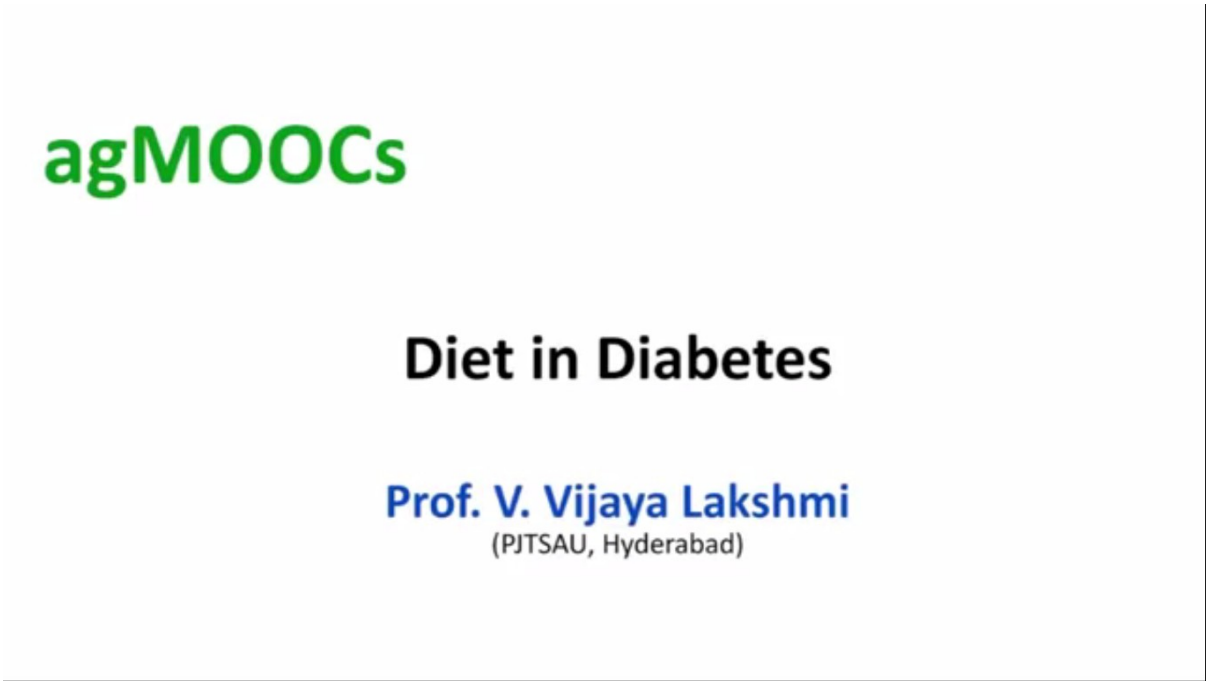

Hi. Welcome back to the present session. And in this class we will be talking about the diabetes mellitus, which has become a very common disorder in all over the world. And this is because of the disturbance in the carbohydrate metabolism where the blood sugar level rises beyond the normal and results in hyperglycaemia. So the control of blood sugar is very important which can be done through diet also. Let us see how it is done.

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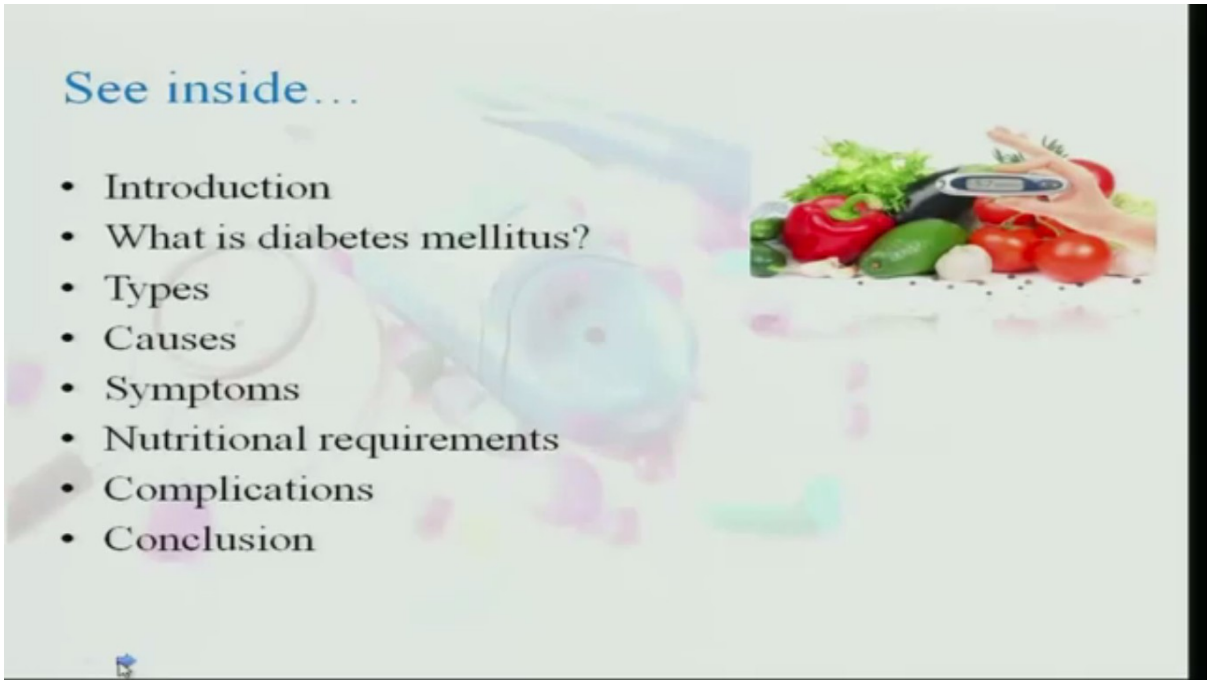

So we will see what is diabetes mellitus, what are the types of diabetes mellitus, what are the causes, symptoms, how the nutritional requirements change, and if not treated properly or if not controlled properly, what are the complications?

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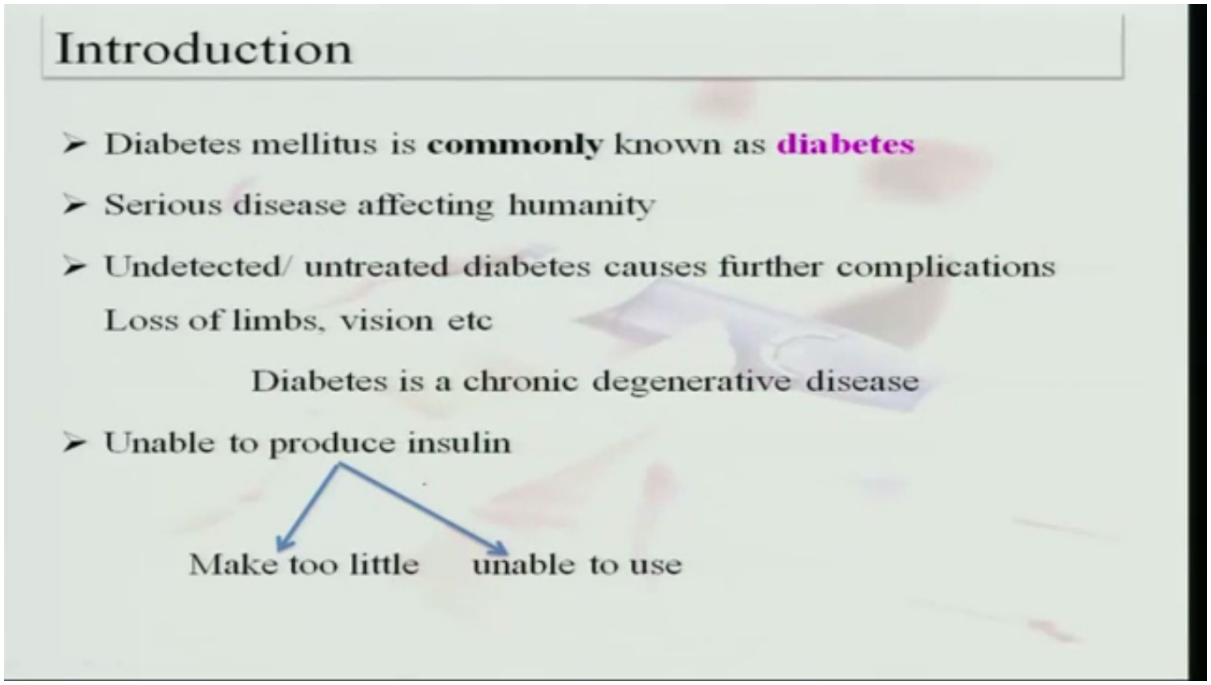

So diabetes mellitus is commonly known as diabetes, and it is a disease which is affecting the humanity. So undetected and untreated diabetes can cause further complications. Sometimes people will not have any symptoms. Therefore, it can be undetected, and this can lead to loss of limbs because of formation of gangrene and you have to ampute the limbs and loss of vision because the nerves in the retina are also affected.

Now this is a chronic degenerative disease because it keeps on affecting the various organs and causes degeneration. And this occurs because the pancreas are unable to produce insulin or they make very little of insulin. So the insulin is the one which carries the glucose to the cells. So this is a carrier. So when insulin is not there, then the glucose cannot be carried to the cells and the entire system is disrupted.

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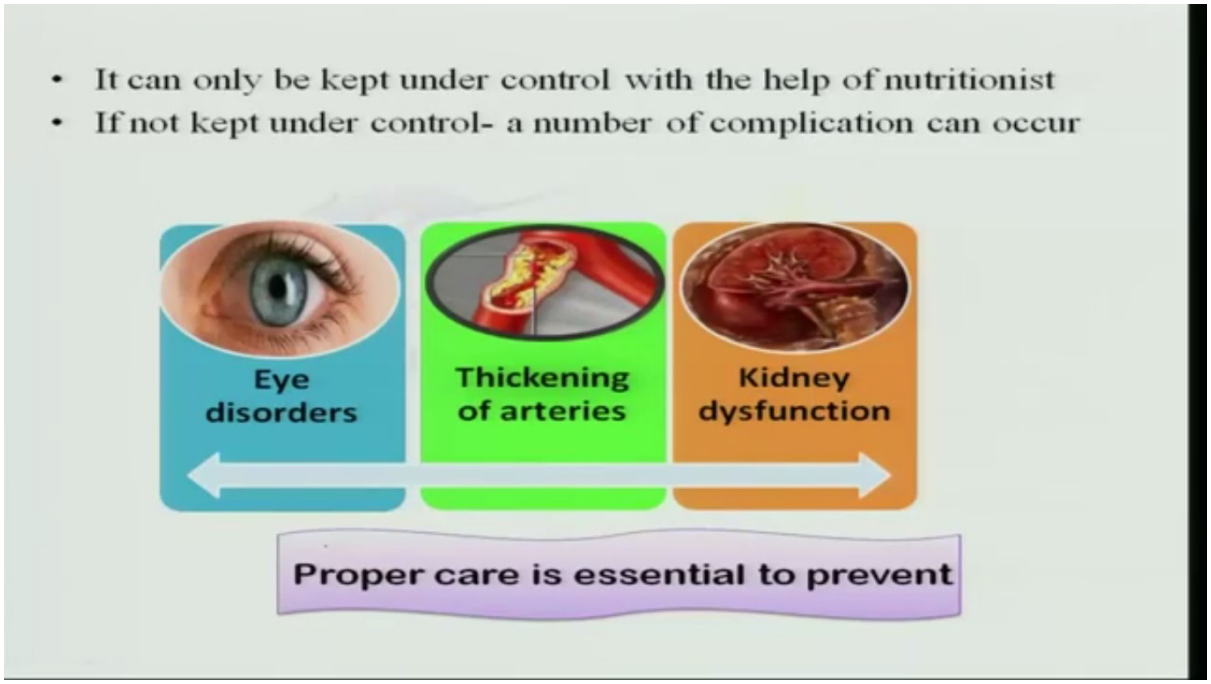

It can be kept under control with the help of a nutritionist. Here the role of a nutritionist is very important and otherwise, a number of complications can occur, like it can affect the eye where the person can become blind. Then it can cause atherosclerosis where there is thickening of the arteries, and it can also disrupt the kidney function because lot of glucose is being excreted and the kidneys are overloaded with it. So proper care is essential for prevention of diabetes.

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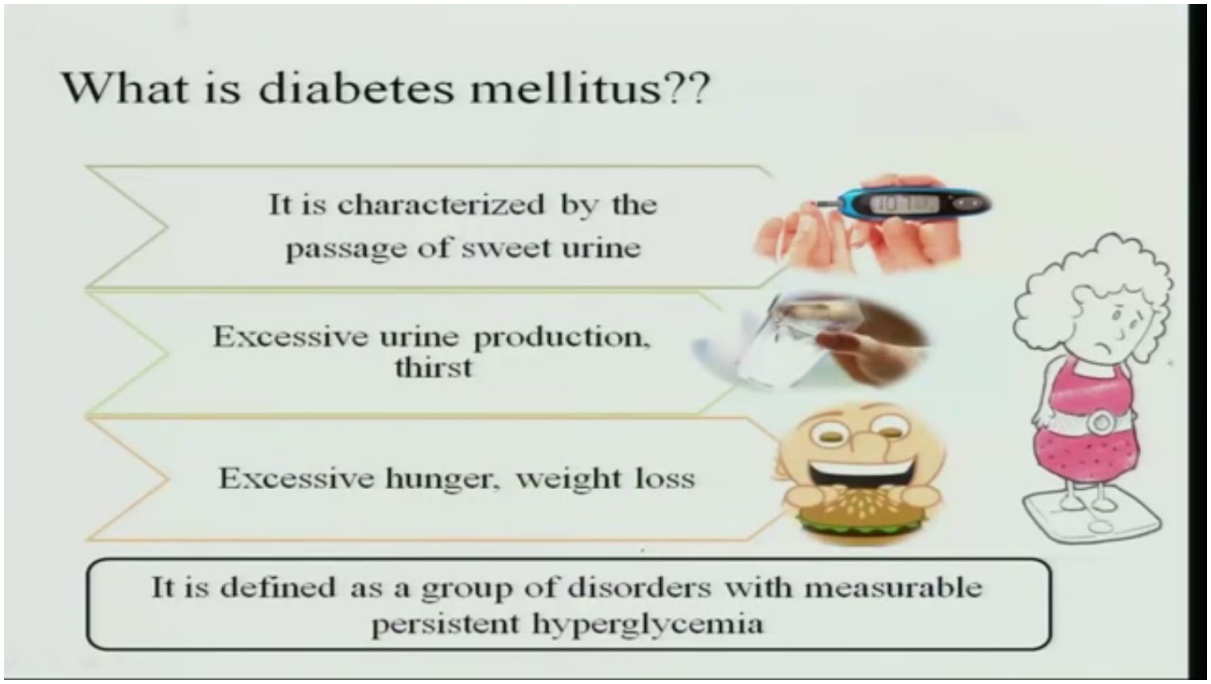

Now what is diabetes? It is characterized by a passage of sweet urine. That means lot of glucose is passed through urine and excessive urine production because there is excess of the glucose in the blood. It attracts more water and there is excessive urine production and because there is excessive urine production, the person feels lot of thirst. So then there is excessive hunger and weight loss. So it is defined as a group of disorder and along with a persistent hyperglycaemia or high level of blood sugar in the body.

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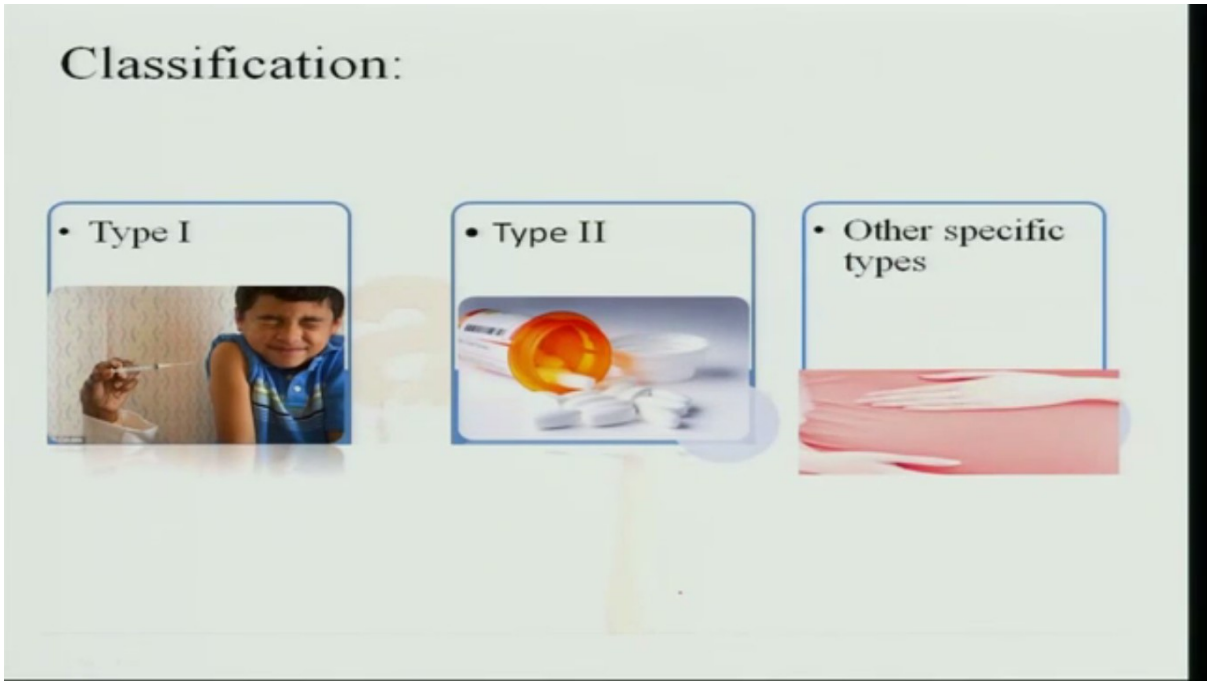

So classification can be it can be Type I, Type II and other specific types.

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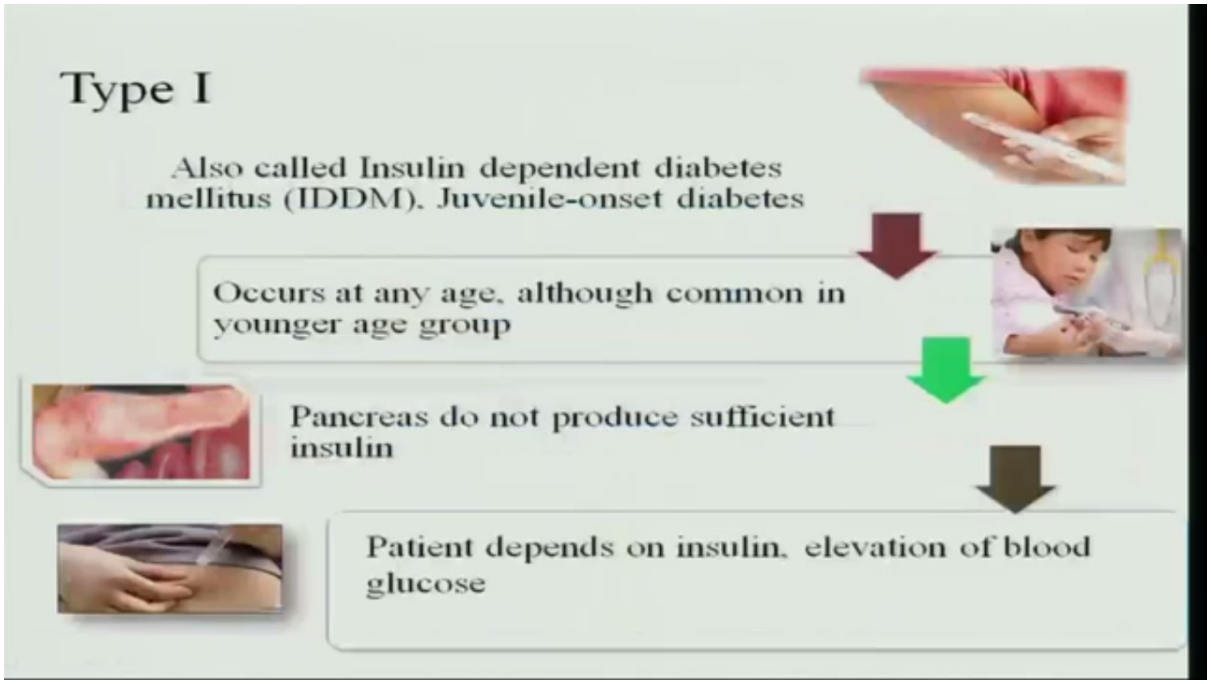

So what is a Type I diabetes? It is also called as Insulin dependent diabetes, and it generally occurs in children, and so it is called as Juvenile-onset diabetes. And pancreas do not produce sufficient insulin in this case and the patient has to depend on insulin, and there is always an elevated level of blood glucose in the blood.

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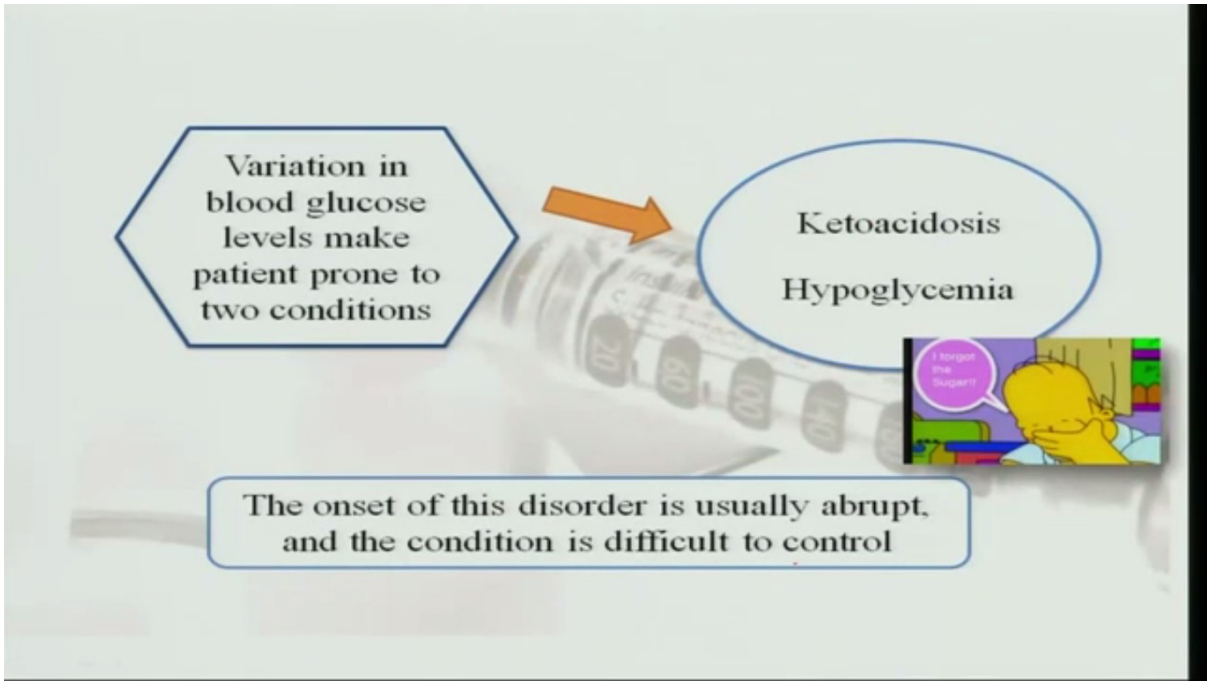

So variation in the blood glucose level takes the patients and it is prone to two conditions. The patient will have either ketoacidosis where the ketone bodies in the blood increase or he may very fast go into hypoglycaemia. The sugar levels go very down. So the onset of this disorder is usually abrupt and the condition is difficult to control.

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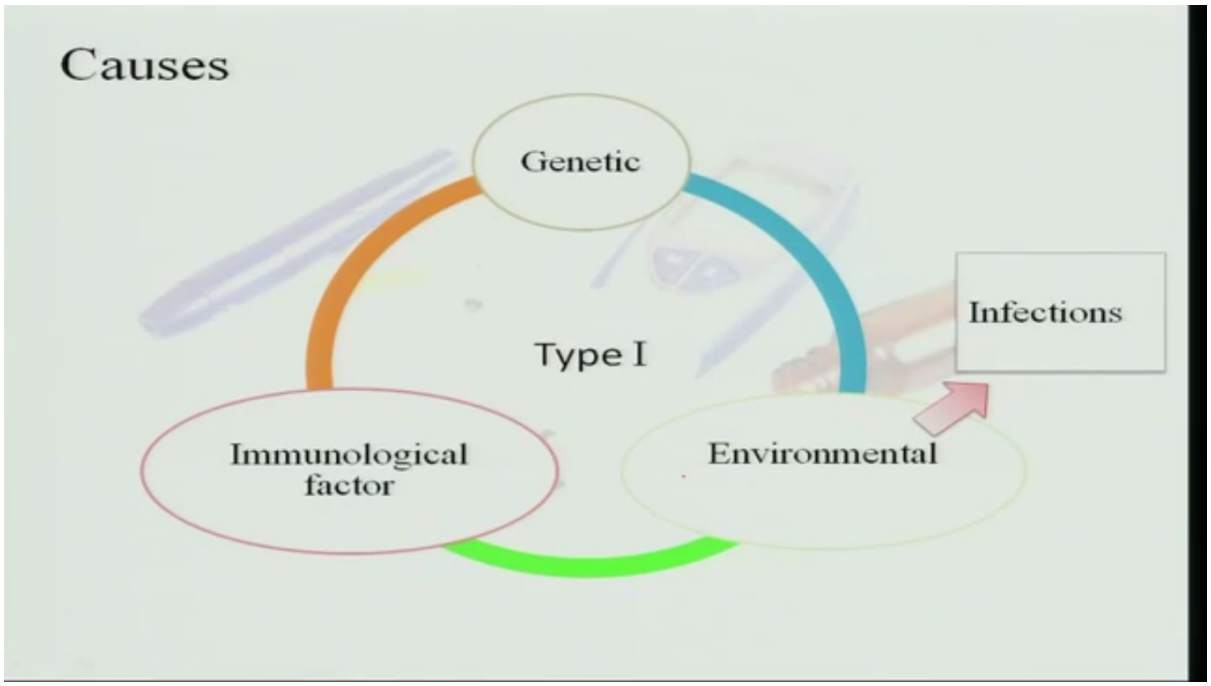

So the causes may be genetic. So, generally, the Juvenile onset of diabetes, if family history of the diabetes is there, it may be genetic or it is because of any immunological factor or environmental when there are some infections.

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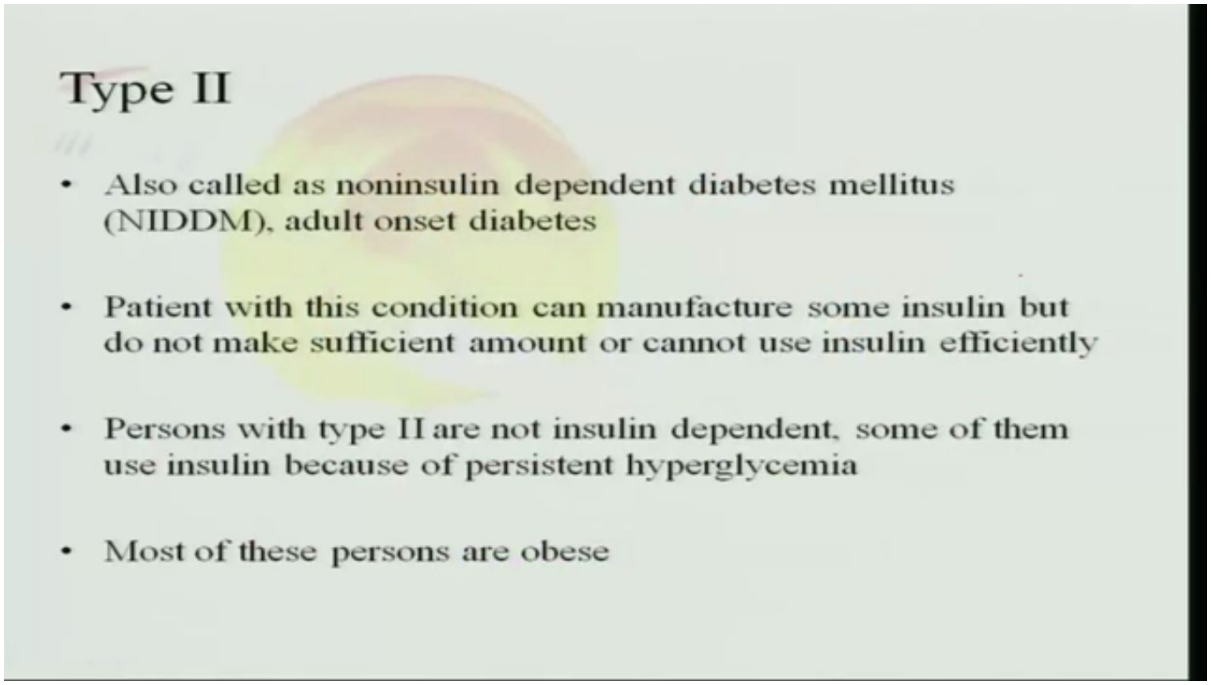

Now the Type II diabetes, it is also called as noninsulin dependent diabetes mellitus, and it is usually an adult onset diabetes. The adults are prone to Type II diabetes. And here the patient can manufacture some insulin, but does not make sufficient insulin for handling the glucose level, and persons of Type II diabetes not insulin dependent. Only they have to take the medicine to control the hyperglycaemia. And most of the patients are obese.

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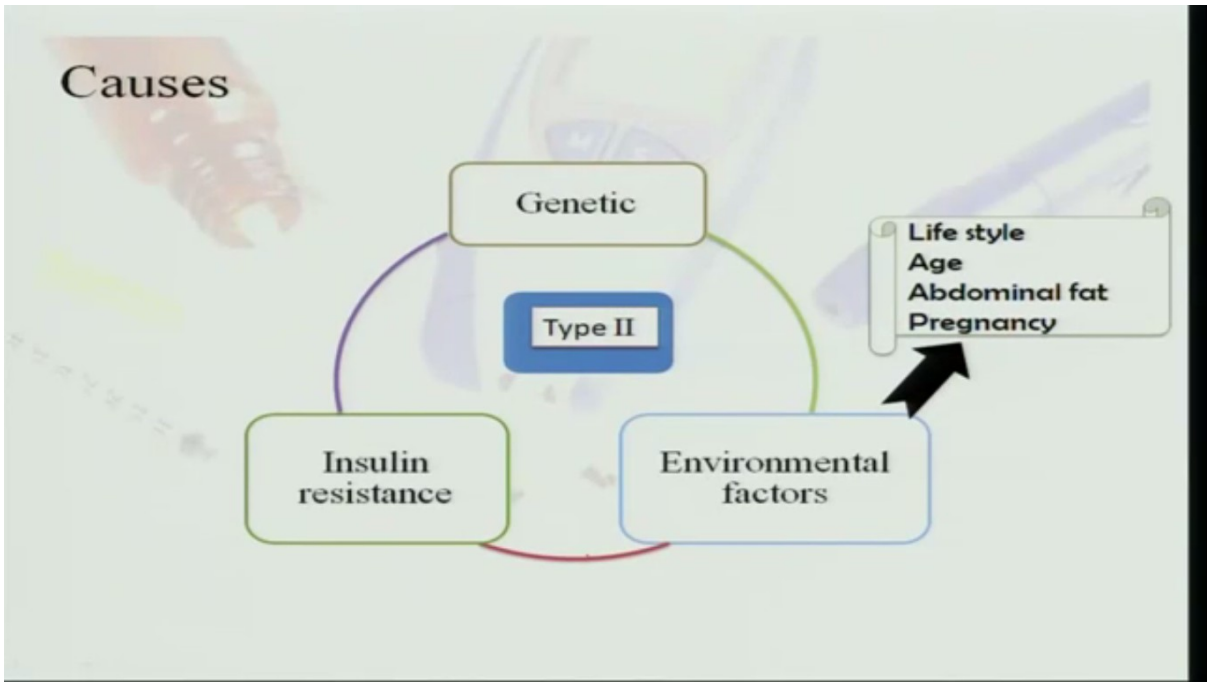

Again, the causes may be genetic. If both the parents are having diabetes, at least 50% of the children will get diabetes. And this occurs because of insulin resistance. When you are pumping the body with carbohydrate and the carbohydrate metabolism, so at some part of the time the body becomes insulin resistant.

Then environmental factors, like lifestyle where you eat high carbohydrate fruit and continuously eat high-calorie food. As the age increases, only then the Type II diabetes occurs. And abdominal fat, when there is central obesity, this also produces insulin resistance and leads to diabetes. And pregnancy, in some women during the pregnancy, they get diabetes or high level of sugar in the blood. But this is called as gestational diabetes, and some women can get rid of it after delivery and for some women, it can be continued.

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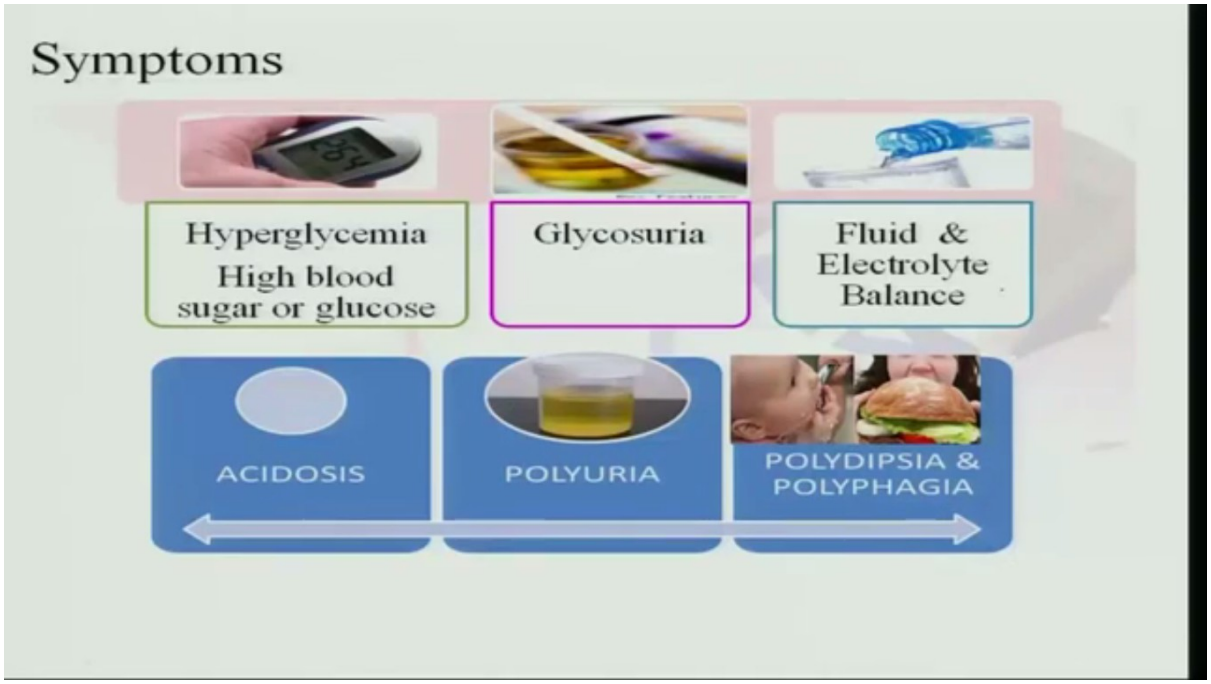

Now symptoms are hyperglycaemia. The blood sugar level goes beyond the normal blood glucose level that is normal is 70 to 110 milligrams per deciliter of blood. So if the level is consistently if you take three or four readings of fasting blood glucose, if it is more than this, then it is hyperglycemia and random blood glucose is more than see you can see here 264, more than 140, then you can expect the person is diabetic.

Then there is glycosuria. That means the glucose is excreted in the urine and fluid and electrolyte balance are disturbed. So the person has acidosis, polyuria and polydipsia is excessive thirst. Polyphagia is excessive hunger.

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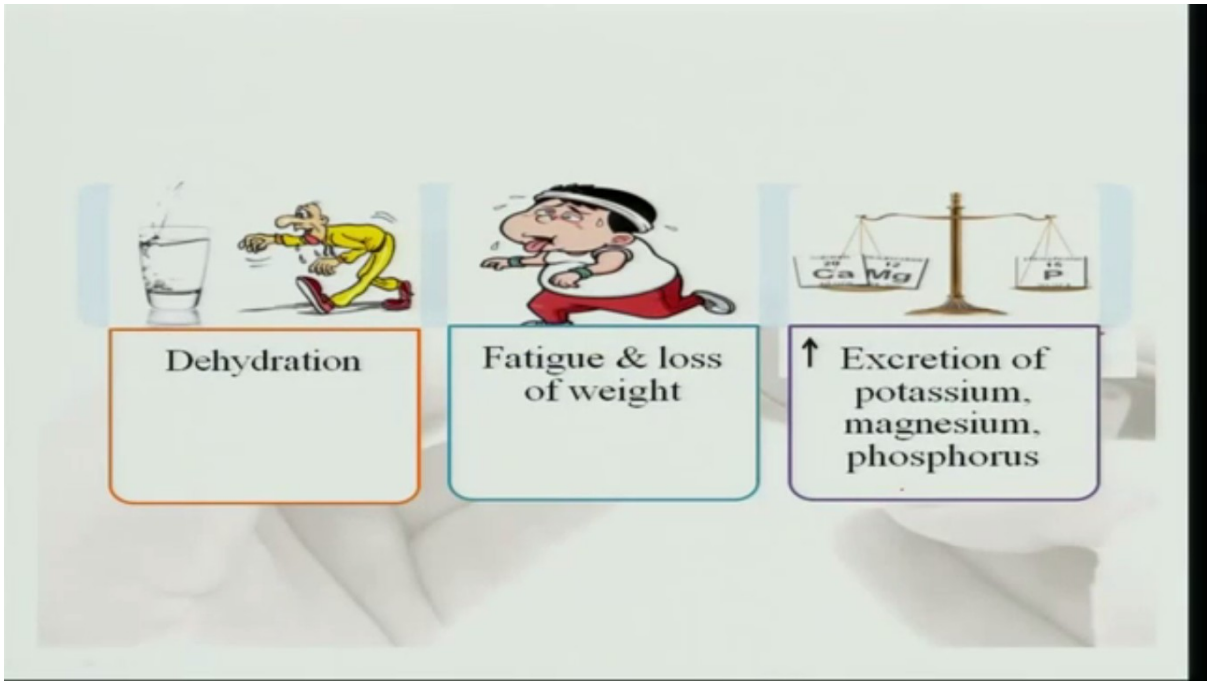

So because there is excess of urination, the person goes into dehydration. There is fatigue and loss of weight, and there is lot of excretion of potassium, magnesium and phosphorus along with the urine excretion.

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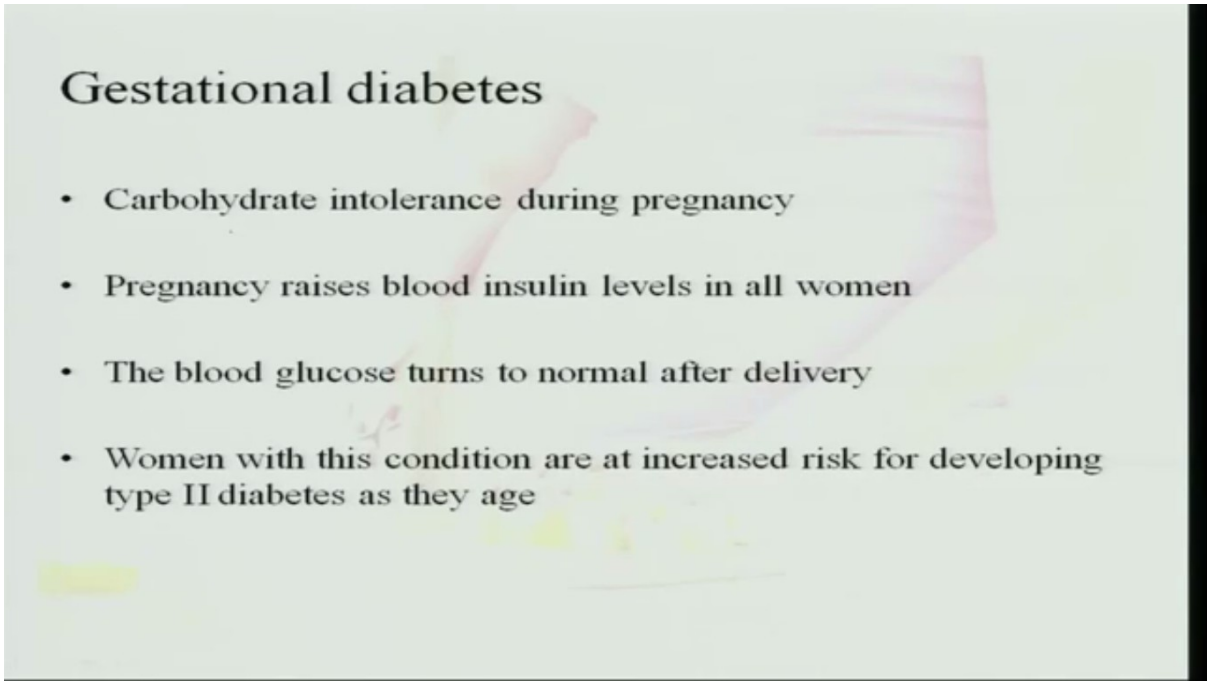

Now gestational diabetes is carbohydrate intolerance during pregnancy. So the pregnancy raises the blood insulin levels in all the women. So the blood glucose turns into normal after delivery. And in women with this condition are increased risk of developing diabetes at a later age.

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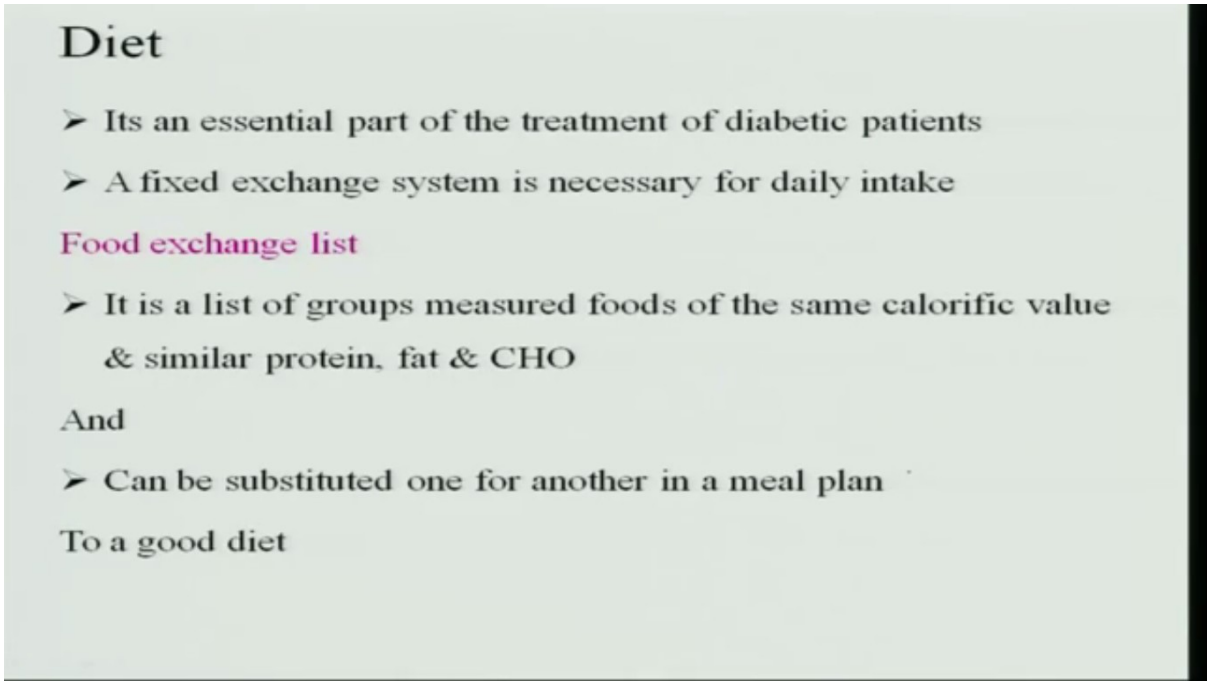

Now diet is the essential part of treatment of diabetes. So there should be a fixed exchange system, which is essential for the patient to follow the daily diet. So what is a food exchange list?

It's a list of group of measured foods giving the same amount of calories and almost the similar amount of proteins, fats and carbohydrates. So if the patient has a list of these foods, he can select any one of the food, which gives him the equal amount of energy, and it can be substituted for one another in a diet so that the patient has a satisfactory diet every day.

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Now this food exchange list helps the patient to restrict the food intake according to the insulin prescription. They have a variety in diet. Then they can easy for learning the principles of diet and also easy for maintaining the body weight.

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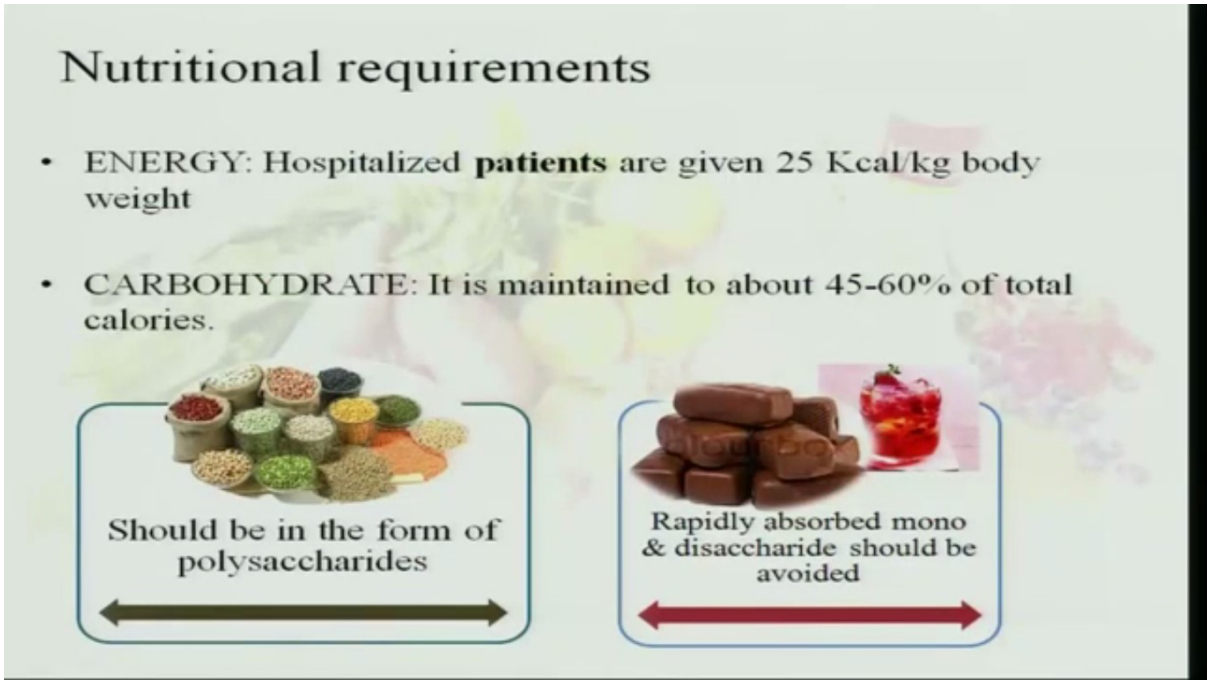

Nutritional requirements, when the blood glucose is uncontrollable, then the patients are hospitalized. such patients are given 25 kilocalories of energy per kg body weight, and carbohydrate is maintained about 45 to 60% of the total calories in the form of polysaccharides and rapidly absorbed mono and disaccharides.

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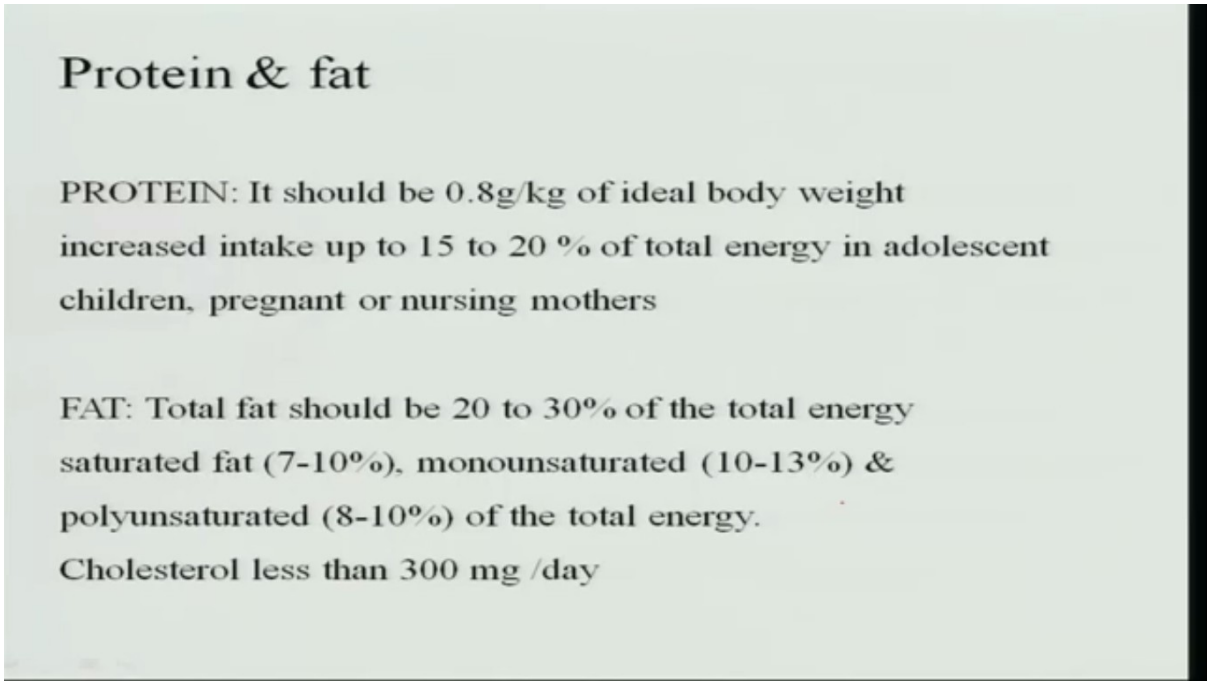

So the protein and fat, protein should be 0.8 grams per kg of the ideal body weight. That means the protein content should be decreased and it should be 15 to 20% of the total energy in an adolescent or a pregnant woman and nursing woman.

So the total fat should be 20 to 30% of the total energy intake from which 7 to 10% will be from saturated fats, 10 to 13% from the monounsaturated fat. Polyunsaturated fat is 8 to 10%. So, and the cholesterol should be less than 300 milligrams per day in the diet.

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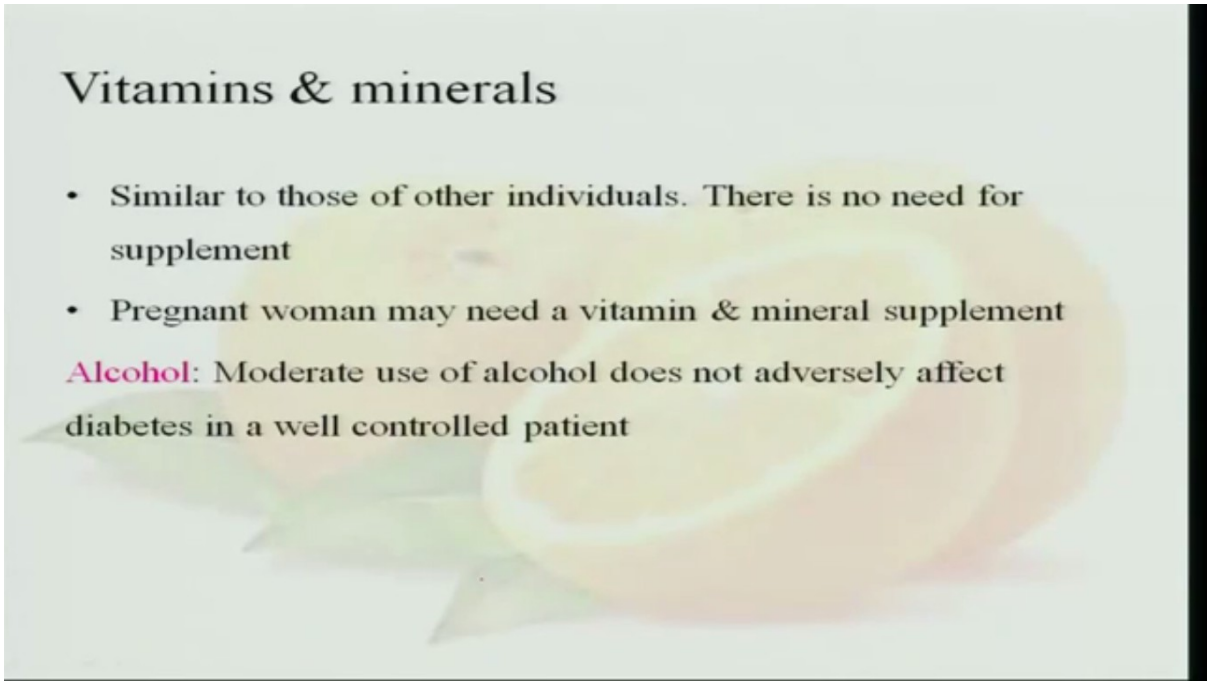

Vitamins and minerals can be normal intake. There is no need of any supplement if a balanced diet is taken and the pregnant woman may need vitamin and mineral supplement because she requires additional supplements for the foetus to grow. And moderate use of alcohol will not have an adverse effect, but it is better to limit the alcohol in a controlled manner.

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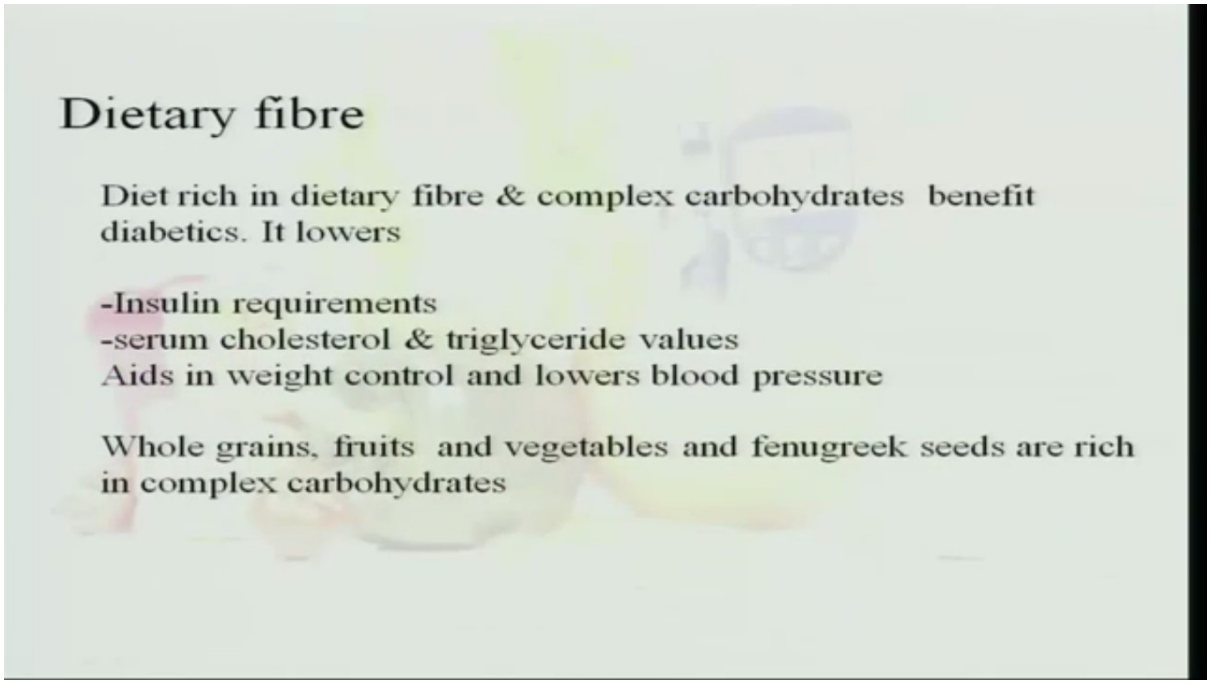

Now dietary fibre, a diet rich in dietary fibre and complex carbohydrate is very important for diabetics, because it lowers the insulin requirements. The serum cholesterol and triglyceride levels are reduced by giving a dietary fibre and it also aids in the control of weight of an individual. So when the weight, and cholesterol, and triglycerides are controlled, naturally the blood pressure is lowered in an individual.

So to get the dietary fibre, we can include whole grains, fruits and vegetables, and fenugreek seeds, which contain lot of complex carbohydrates can be included. So every day if you include about 25 grams of fenugreek seeds in the diet of a diabetic, it has a very good control in lowering the blood glucose level.

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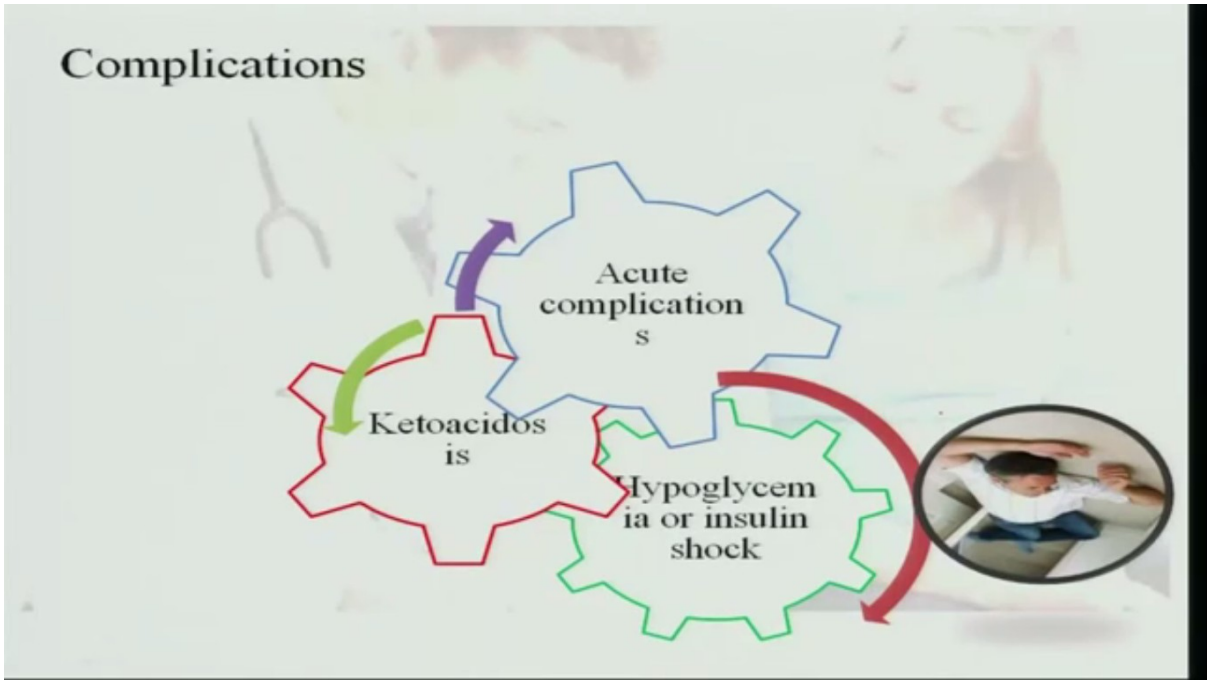

Now if the diabetes is left uncontrolled, there is the blood glucose level is constantly high. It may lead to many complications. So it can have acute complications. It can have ketoacidosis and hypoglycaemia or insulin shock. Suddenly, the individual goes into hypoglycaemia and he goes into coma. So he can fall down anywhere like this.

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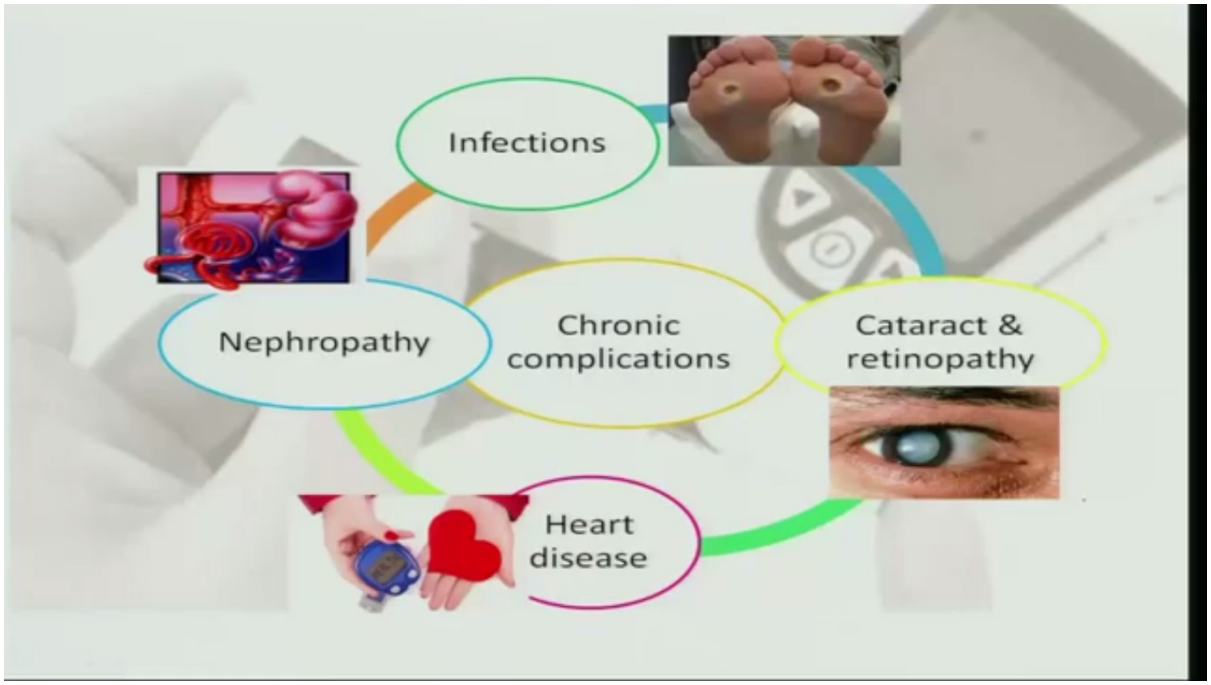

Then they have infections, which the wound is not healed because of high blood sugar level and it attracts the bacteria and the wound is not healed. Then nephropathy is the nephrons in the kidney are affected and the kidneys will become non-functional.

And cataract is the retinopathy, the nerves of the eye are affected. Therefore, it may lead to early cataract or retinopathy. And the heart muscles also are affected there which leads to heart disease.

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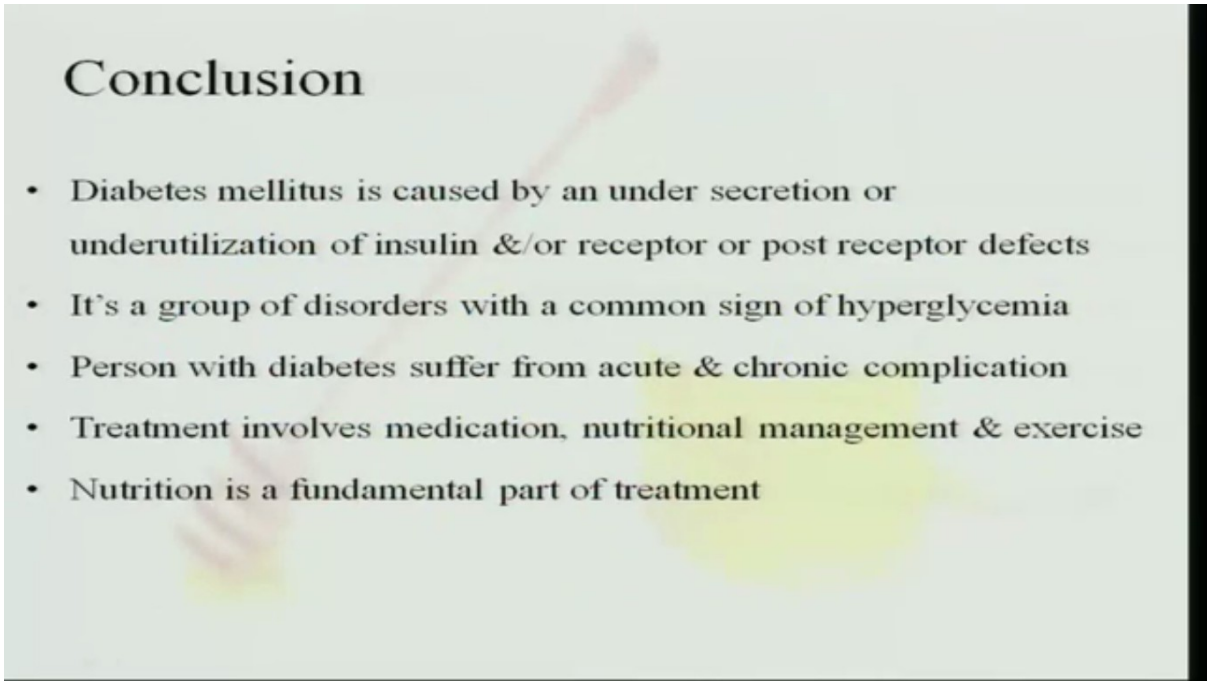

So diabetes mellitus is caused under secretion of pancreas or underutilization of insulin by the receptor and post receptor defects. So it is a group of disorders. It consists of a group of disorders like you have high blood sugar, you have polyphagia, I mean, excessive hunger, excessive thirst. And then you may have infections and you may have high cholesterol levels. Then high lipid levels in the blood and the eyes may be affected. Kidneys may be affected and the liver may be affected. All these are a complicated disorder in the diabetes.

So treatment involves medication, nutritional management, exercise. There are five main points in the treatment of diabetes. One is the diet, exercise, then monitoring of diabetes, and medication, and exercise. These are the five principal things which you have to follow in the control of diabetes. And nutrition becomes the fundamental part of the control of diabetes.

Thank you.