agMOOCs

Diet in Renal failure

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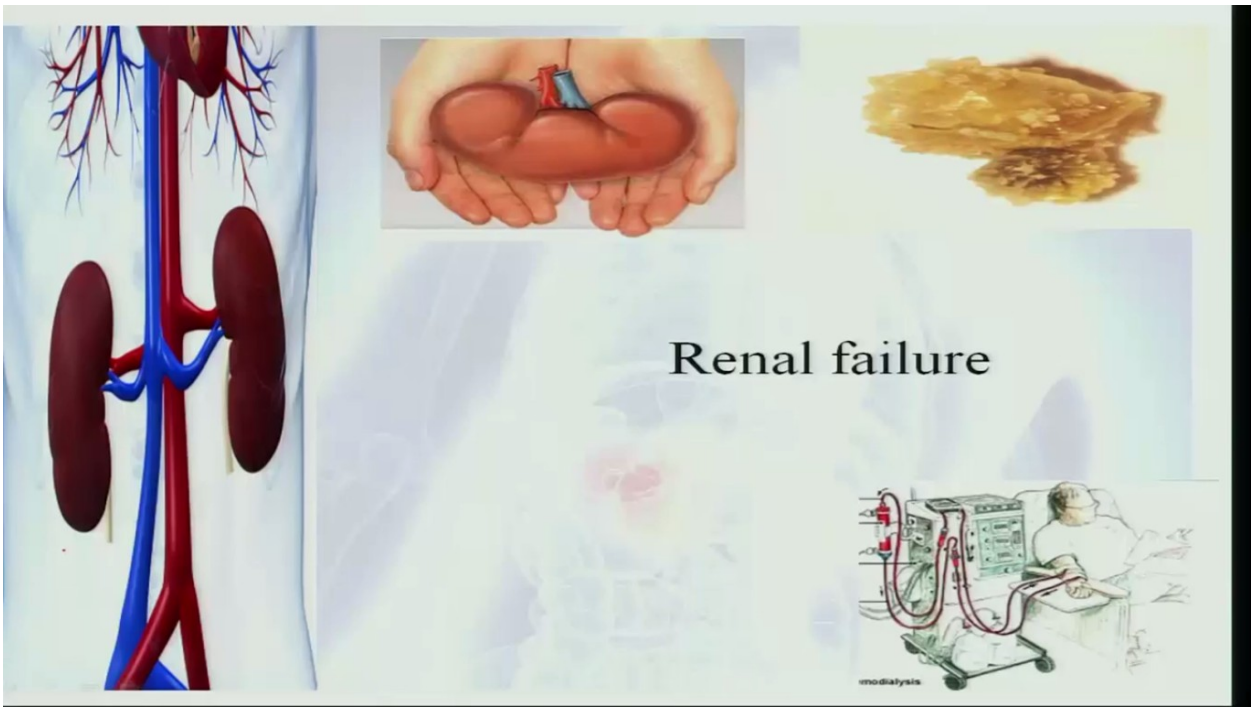
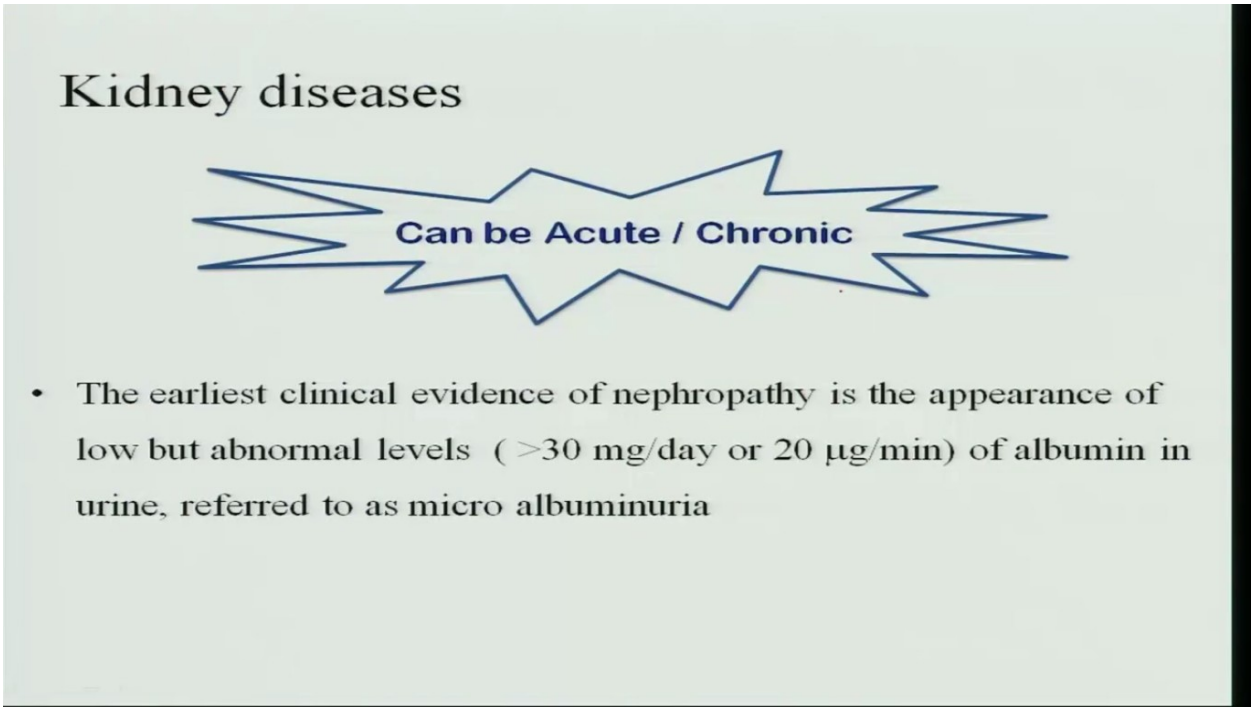
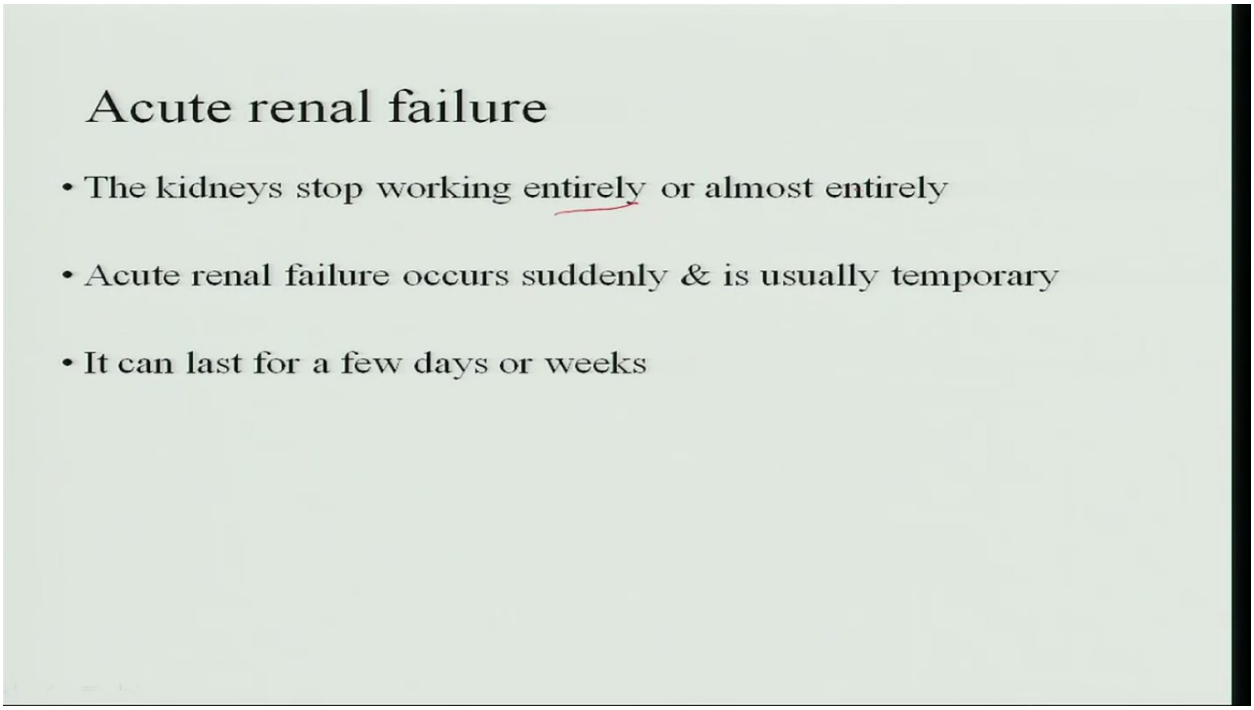
Last class we have seen what is the damage that is occurring because of glomerulonephritis and the kidney disorder, nephrosis, what we have to do, and how we can prevent the degeneration of kidneys was very well seen.



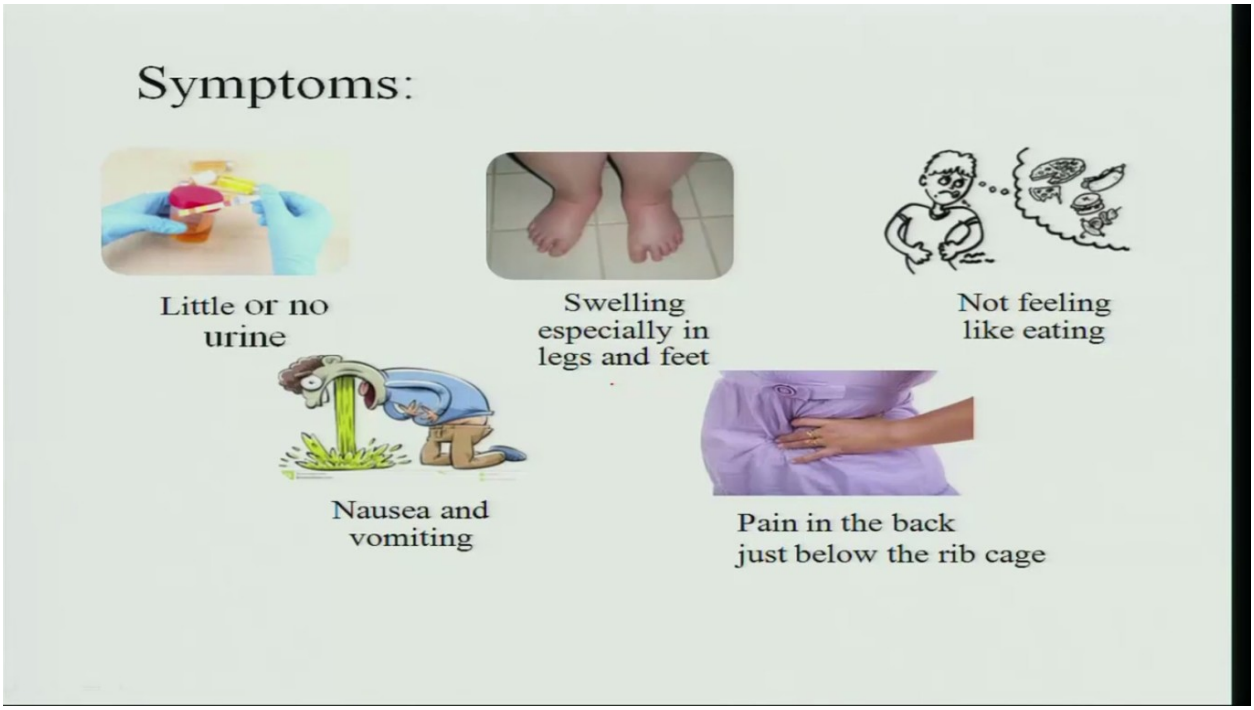
Now let us see if we don't take proper care for the degeneration of the kidneys then the condition leads to a place where there is failure of the kidneys and they further don't work.



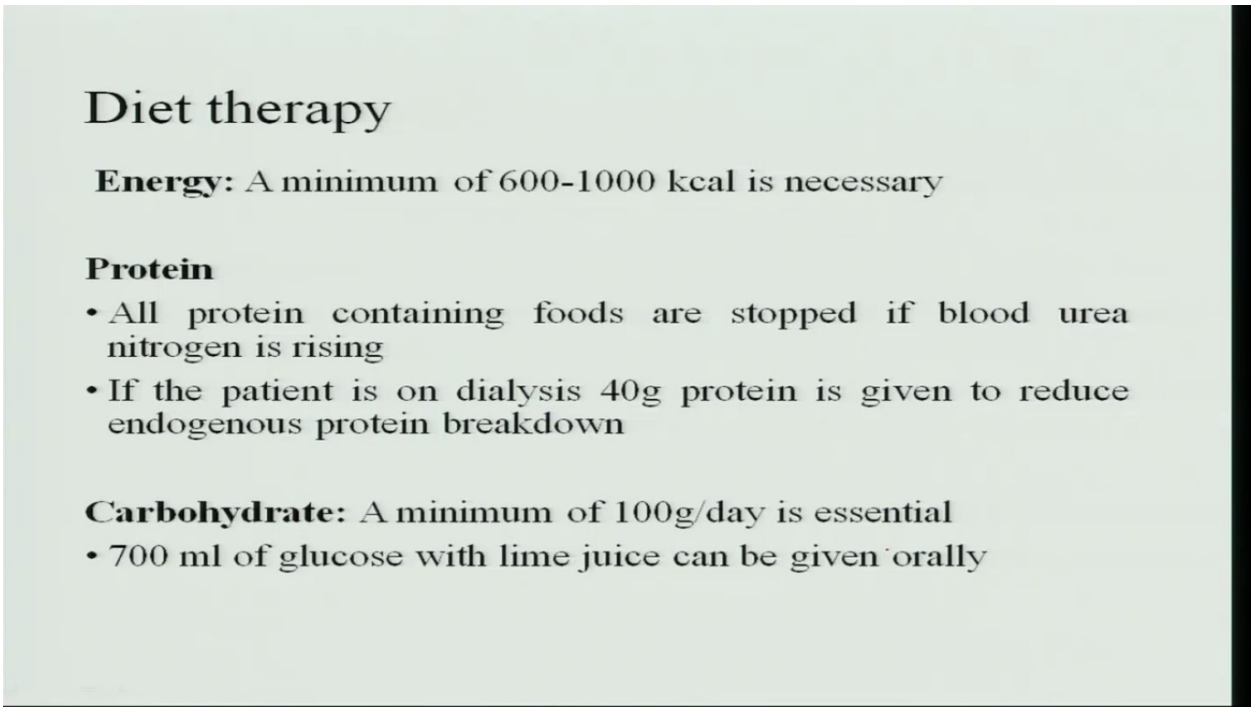
Now kidneys diseases can be acute or chronic and the earlier clinical evidence of nephropathy is appearance of abnormal levels or that is more than 30 milligrams of albumin in the urine. Albumin is nothing but a fraction of protein that is excreted in the urine. So this is called as microalbuminuria.



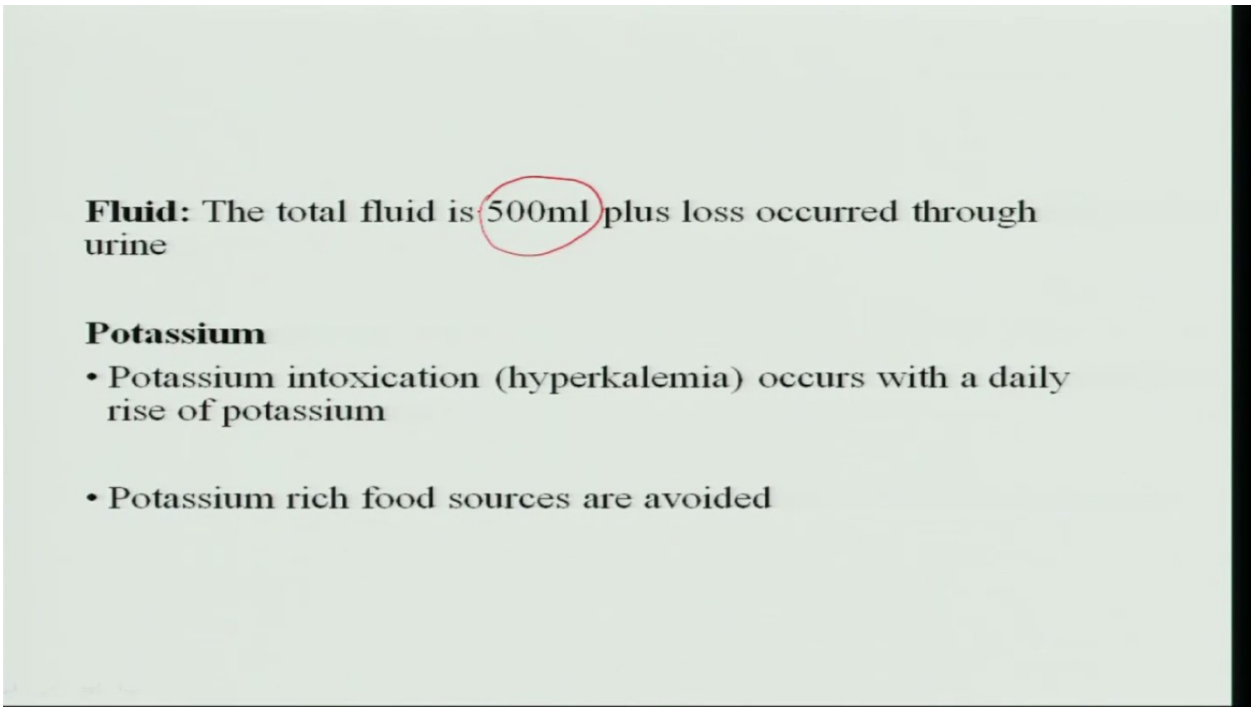
And acute renal failure the kidney stop working entirely or almost entirely and the failure is sudden and usually it is temporary you can just recover and the kidneys can function normally in acute renal failure and this can go on for a few days or weeks.



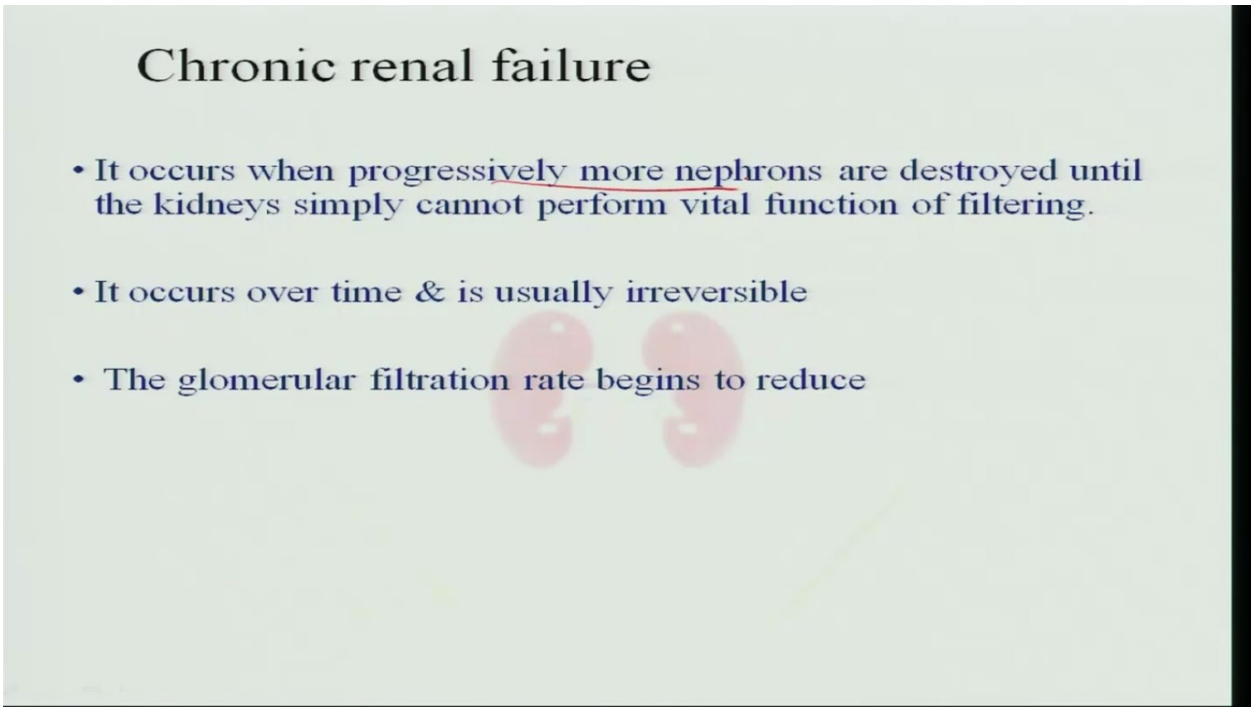
Now symptoms of the acute renal failure are there is little or no urine that means oliguria or anuria. Then swelling especially in the legs and feet because the body's weight is borne by the legs generally edema generally first occurs in the feet and the peripherals of the body. And loss of appetite. And then they have nausea and vomiting and pain in the back just below the rib cage where the kidneys are situated.



Energy; a minimum of 600 to 1000 kilocalories is necessary and all the protein containing foods are stopped if the blood urea nitrogen is rising. The level of serum or blood urea nitrogen is measured and if it is rising then the protein containing food should be stopped. And if we patient is on dialysis. Dialysis is nothing but artificially clearing all the waste products from the urine and then putting back all the fluids into the body. So this can reduce the endogenous protein breakdown during the dialysis. So you give 40 grams of protein. Then carbohydrate a minimum of 100 grams per day is essential and you can give 700 milliliters of glucose along with lime juice. So this can be given orally.



Then fluid intake here it has to be 500 ml plus the amount that is excreted. So whatever amount of urine excreted plus 500 ml is the requirement for this patient. Then potassium intoxication can occur or it is called as hyperkalemia with daily rise in potassium when there is renal failure. So all the potassium rich foods should be avoided or since potassium again is widely available in all the force food should be leached that means they have to be boiled in water and the water has to be discarded so that the potassium is lost.

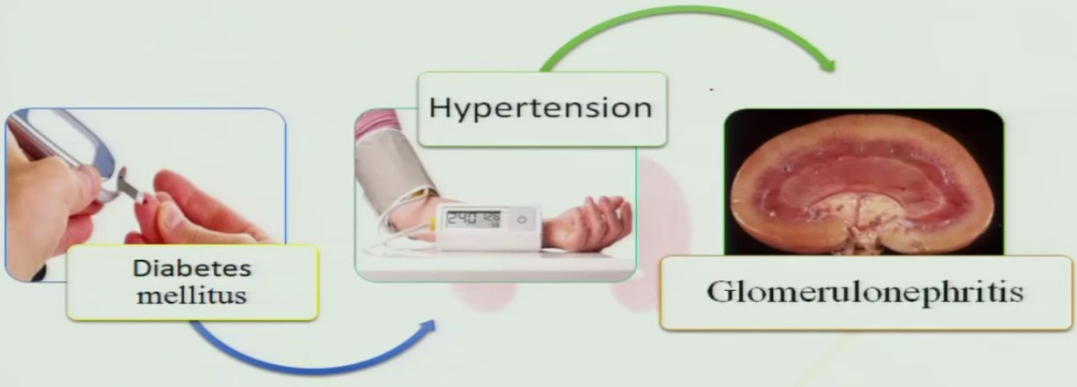


Then chronic renal failure it occurs when progressively more number of times the acute failure occurs and more and more nephrons are destroyed until the kidneys simply cannot perform the vital function of filtering all the nephrons are damaged and further the kidneys cannot filter. So it occurs over time and usually this is not reversible. Till the stage of acute renal failure the kidney failure is reversible but once it becomes chronic it becomes irreversible. So the filtration rate begins to reduce.

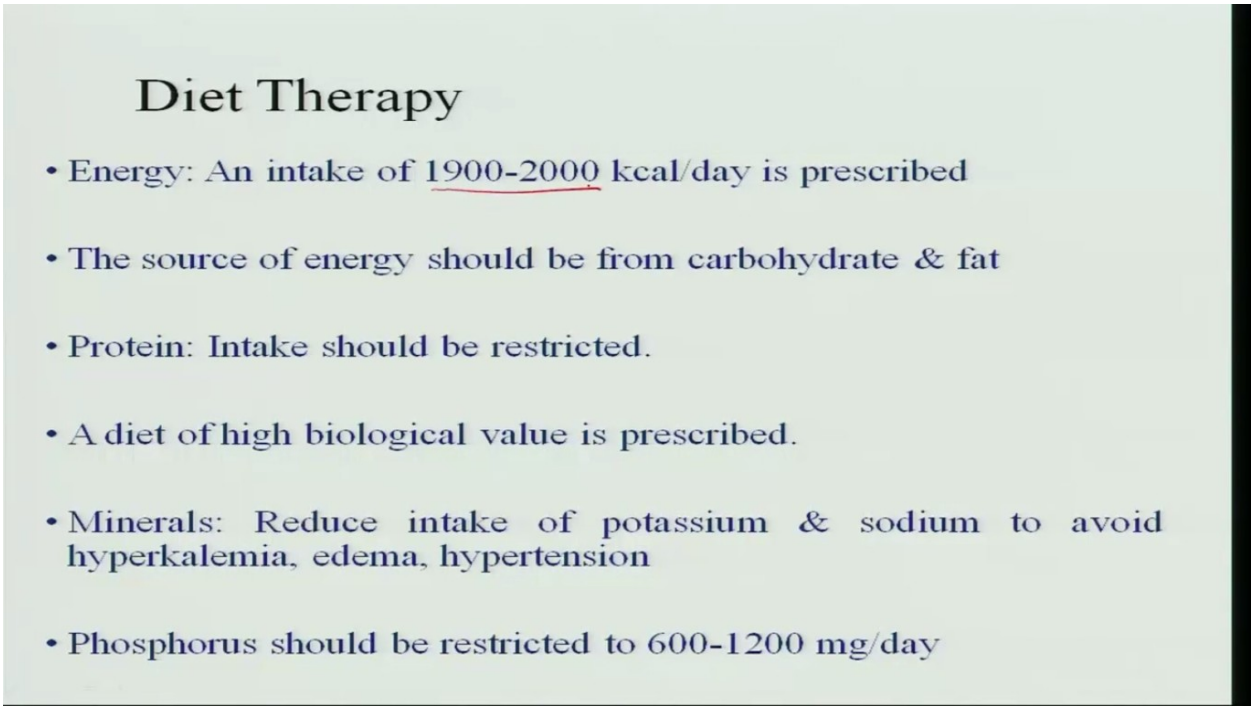
- When the GFR drops from 125ml/min to less than 30ml/min, dietary modification is initiated
- When the GFR reduces to 3ml/min, dietary control is not sufficient and dialysis or kidney transplant is necessary

So normally the GFR drops from 125 ml to less than 30 ml per minute. Five times it drops so here the dietary modification is initiated and when the GFR reduces to 3 ml per minute the dietary control also is not sufficient. So the only way you can restore is by a kidney transplantation.

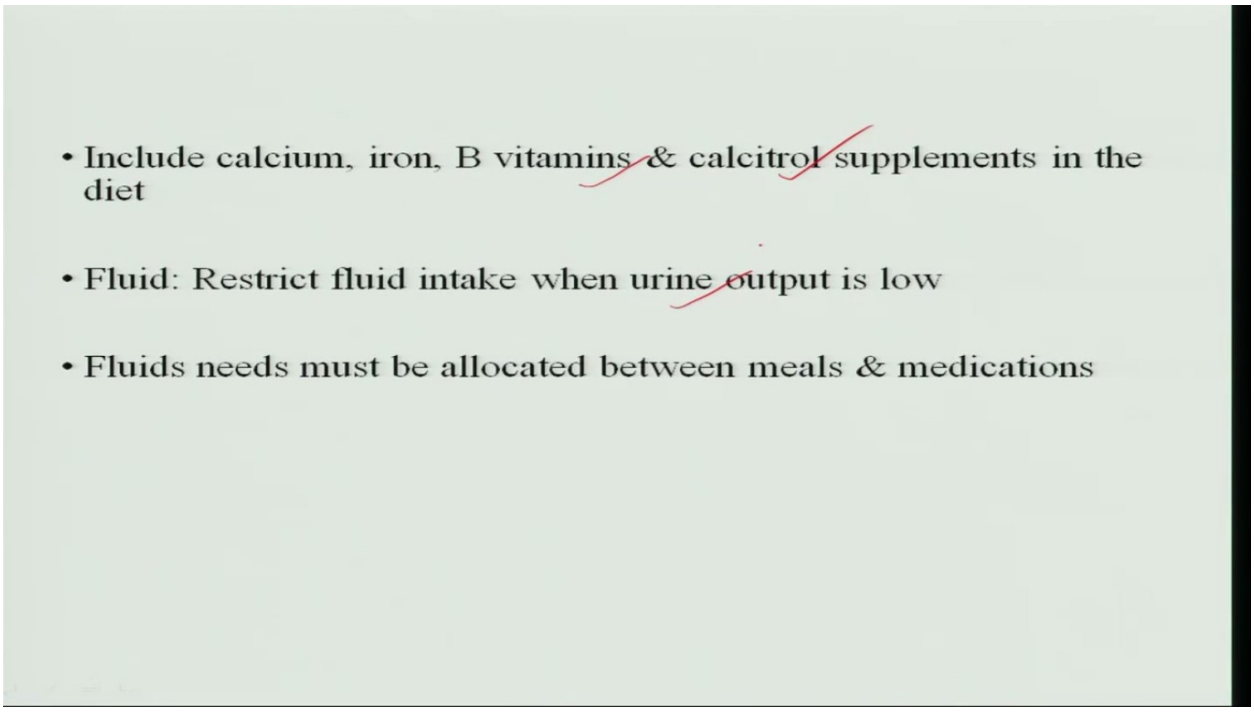
Causes:



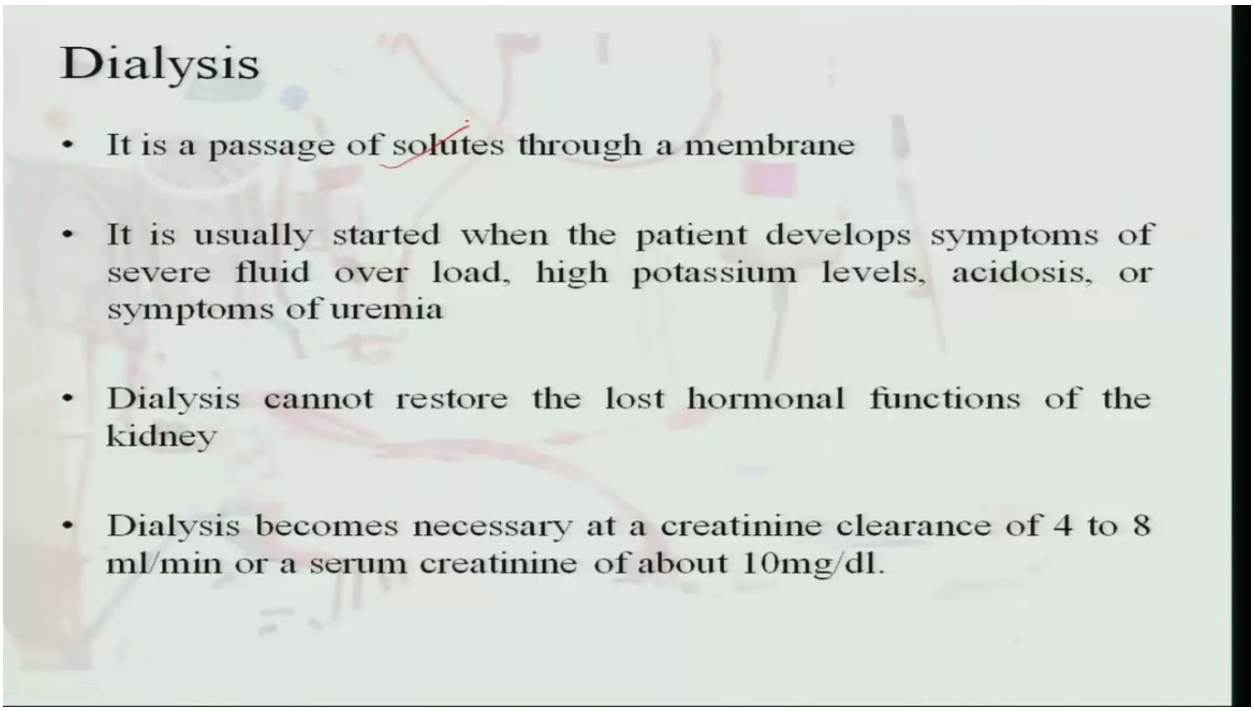
So now the causes of the chronic renal failure are one is diabetes mellitus. If it is uncontrolled diabetes mellitus then the kidneys become overloaded and start deteriorating and one fine day the renal failure occurs. And another cause is hypertension because of diabetes also it leads to hypertension and then the glomeruli also get damaged and nephritis occurs.



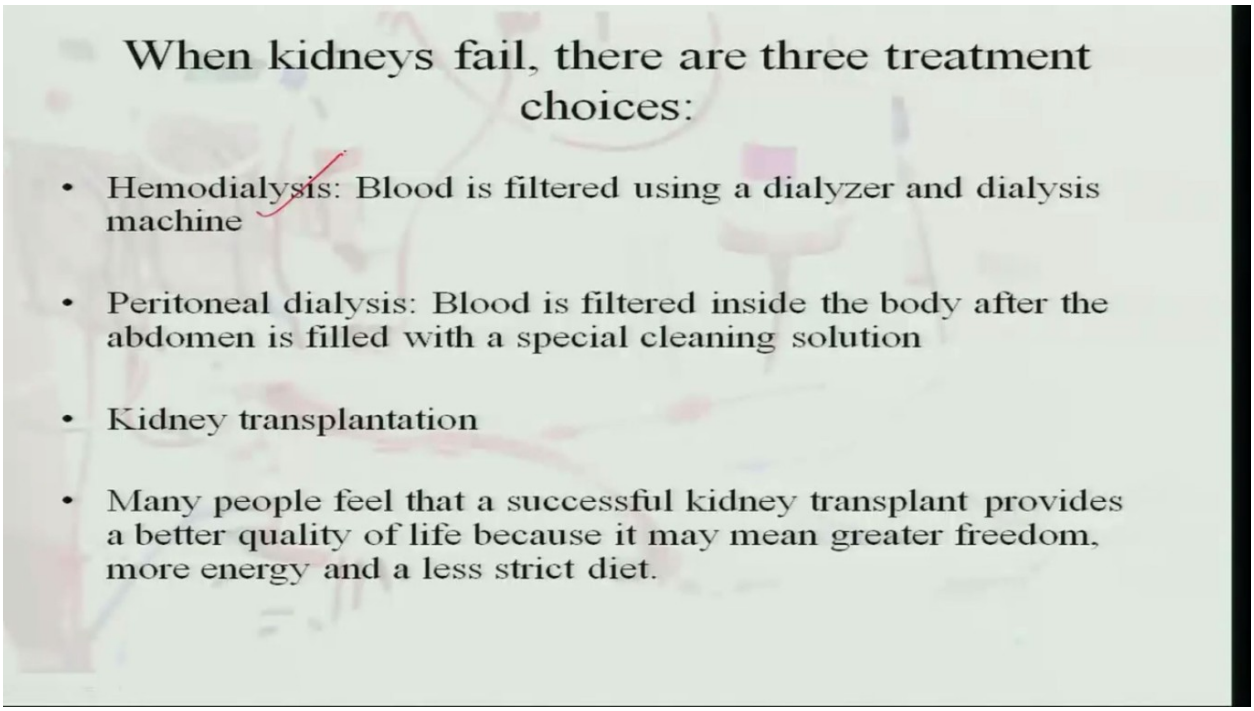
Now diet therapy for the renal failure is an intake of 1900 to 2000 kilo calories per day is prescribed and the source of energy flow should be from carbohydrate and fat so that you spare proteins. Then proteins the intake itself is restricted because they are getting lost in the urine or the urea nitrogen is being increased and whatever protein you are giving is it should be of high biological value. High biological value means whatever protein is given it should be utilized by the body. That should be the type of protein that should be given. And minerals reduce the intake of sodium and potassium so that you can reduce the hyperkalemia, edema, and hypertension. These three conditions can be prevented. Then phosphorus also is restricted to 600 to 1200 milligrams per day.



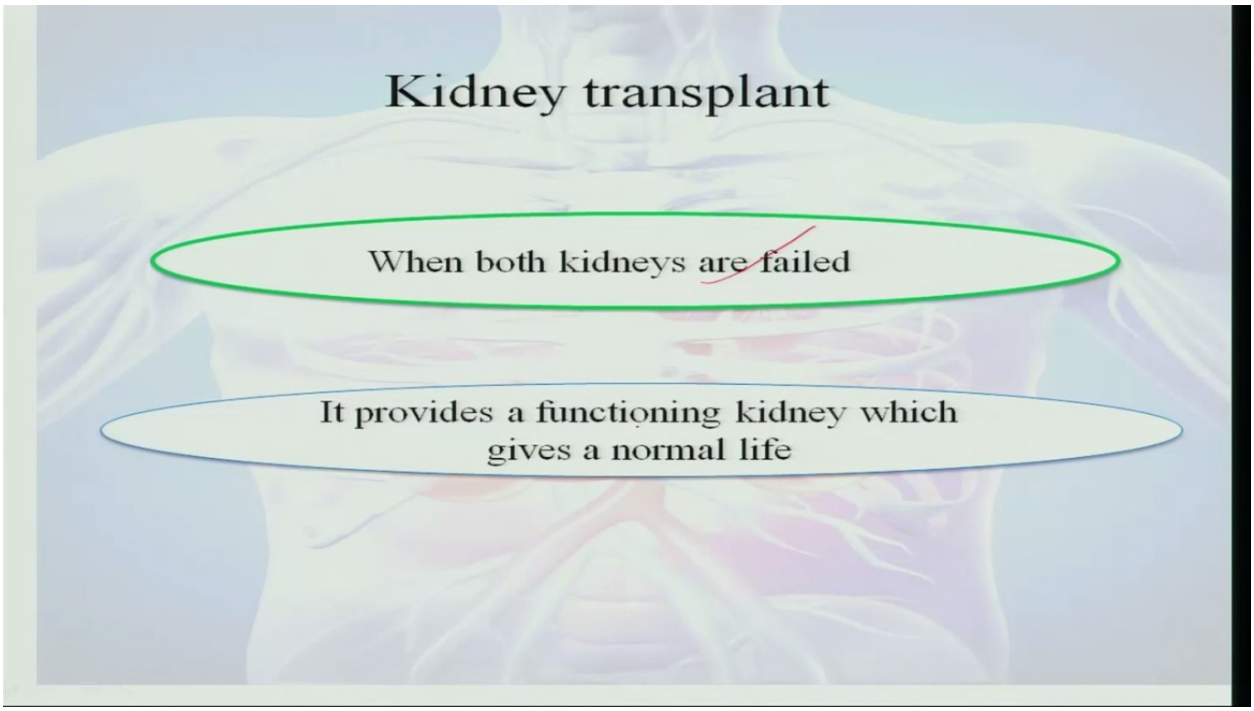
You have to include calcium, iron, B vitamins and vitamin D because when you are restricting the diet with calories and protein naturally the other nutrients also are restricted. Therefore you have to supplement minerals and vitamins along with it but except for potassium and sodium. Then resting fluid intake when the urine output becomes very low according to the output the intake also is adjusted. And the fluids should not be given along with meals. They should be given in between meals or along with medications because the individual cannot take large amount of fluids there is a restricted amount of fluid. So for medicines you need some fluid therefore along with medication it can be given.



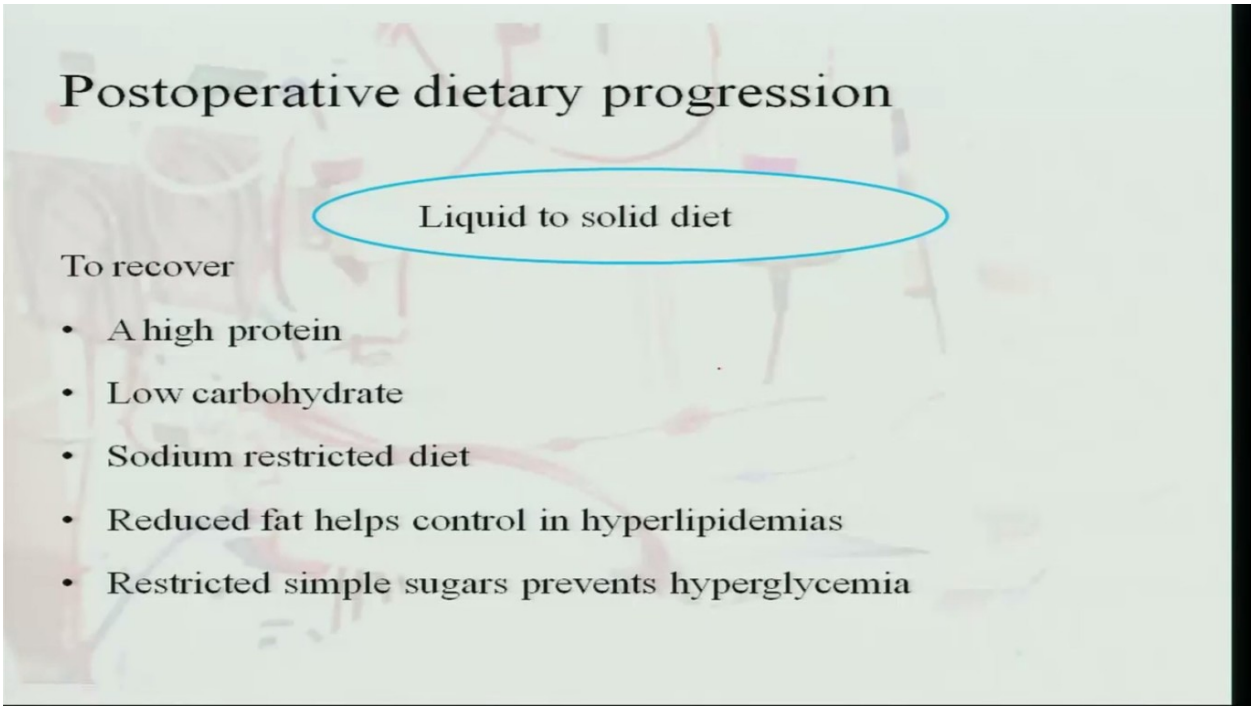
Now dialysis is necessary when the kidneys stop working completely. So it is a passage of the solutes or the blood through the membrane which acts like our glomerulus where the entire system works similar to the body and filters all the waste products. So it is usually started when the patient develops symptoms of severe fluid overload that means there is no output. The entire fluid is remaining in the body. And when there is high potassium levels and the blood becomes acidic the pH of the blood further becomes acidic and there is symptoms of uremia. Uremia is the blood urea levels increase in the blood and then it cannot restore along with the dialysis all the entire blood is taken and then it is cleared of all the waste products. Therefore the hormonal functions of the kidneys like the erythropoiesis and the other hormones that are secreted by the kidneys are also lost but dialysis will not be able to bring back the hormonal functions of the kidney and becomes necessary that creatinine clearance of 4 to 8 ml per minute and should be brought back by dialysis. So serum creatinine of about 10 milligrams per deciliter indicates that dialysis has to be done.



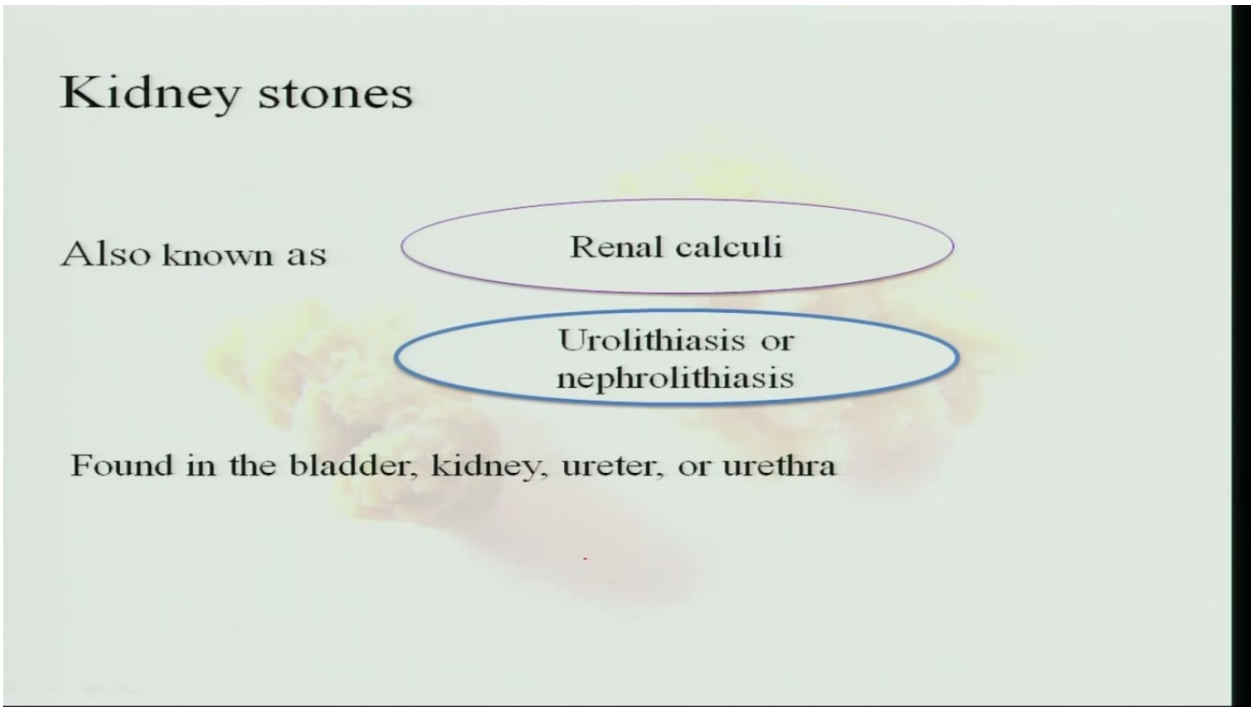
And when kidneys fail there are three treatment choices. One is hemodialysis that is using a machine or the dialyzer to clear of the waste products. Then there is a peritoneal dialysis where the blood is filtered inside the body of the -- wherein the abdomen the fluid is filled with special cleaning solution. So this has to be done once in six hours. The solution has to be removed and fresh solution should be injected into the abdomen so that the waste products are cleared and the third option is kidney transplantation. So many people feel that successful kidney transplant provides a better quality of life because it means a greater freedom otherwise for dialysis hemodialysis once in four days the patient has to go to hospital, stay there for four hours and get it done and peritoneal dialysis since he has to change the fluid he has no freedom for movement. So here the kidney transplantation gives him a lot of freedom.



Now kidney transplant when both the kidneys are failed omly the patient is resorted to kidney transplantation. It provides a functioning kidney and it gives a normal life to the person but it has to be compatible to the body. So a lot of immunosuppressants are given to get the kidney to the normal function and make it compatible to the body.



Now post-operative dietary progression. Once the kidney is transplanted the patient should slowly be got from liquid diet to a solid diet. So to recover you have to give them high protein diet, low carbohydrate diet. Then sodium restricted diet. Then reduced fat so that he does not end up in hyperlipidemia. The lipid levels also do not change and restricted simple sugars to prevent hyperglycemia.



Now the other type of disorder that kidneys can have is kidney stones. There may be formation of stones in the kidneys. So this is called as renal calculi or Urolithiasis and nephrolithaiasis. If the kidney stones are present in the nephrons it is called as nephrolithaiasis and if they are present in the urinary tract they are called as Urolithiasis. So it can be found either in the bladder, kidney, ureter, or urethra.

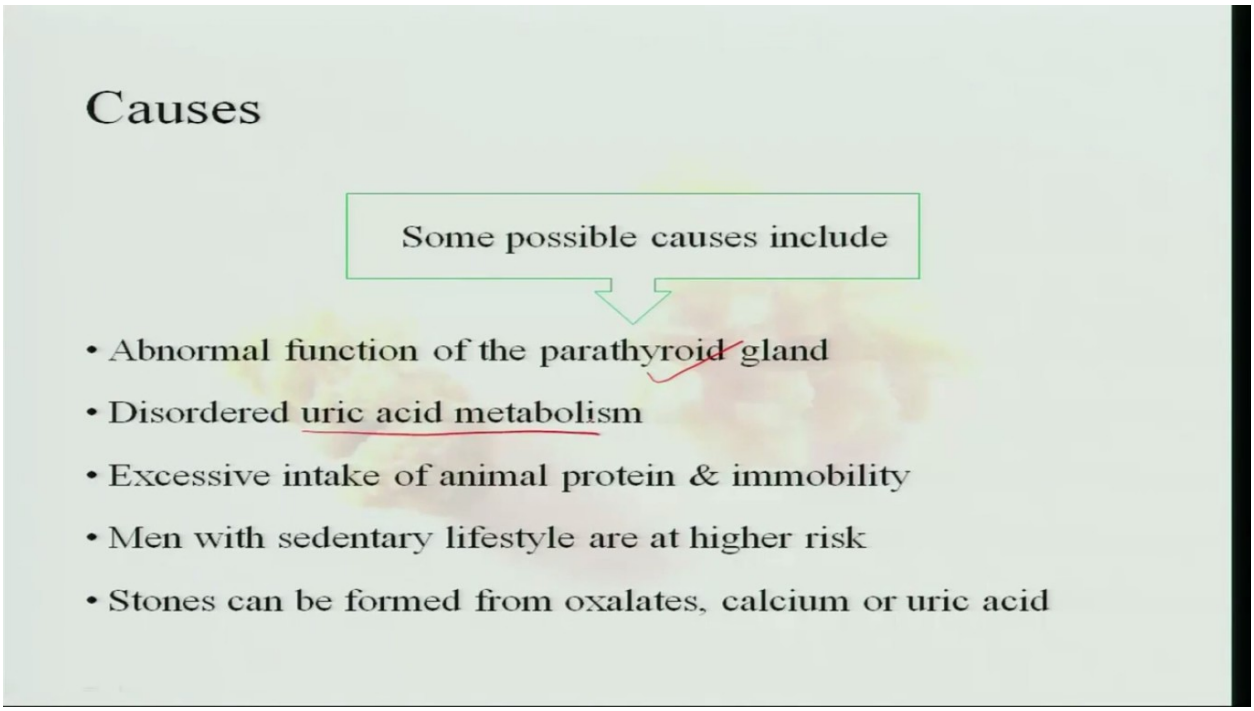
- Urine passes from the bladder down the urethra & exits the body
- A stone also called a urinary calculus, is a deposit of mineral salts held together by a thick, syrupy substance
- It blocks the movement of urine out of the body

And urine generally passes from the bladder down to the urethra and exits the body. So stone also can pass through the urinary tract and urethra and pass out of the body very easily because in the beginning it is a thick syrupy substance which slowly solidifies and becomes hard but when this stone is big enough it can block the urine output.

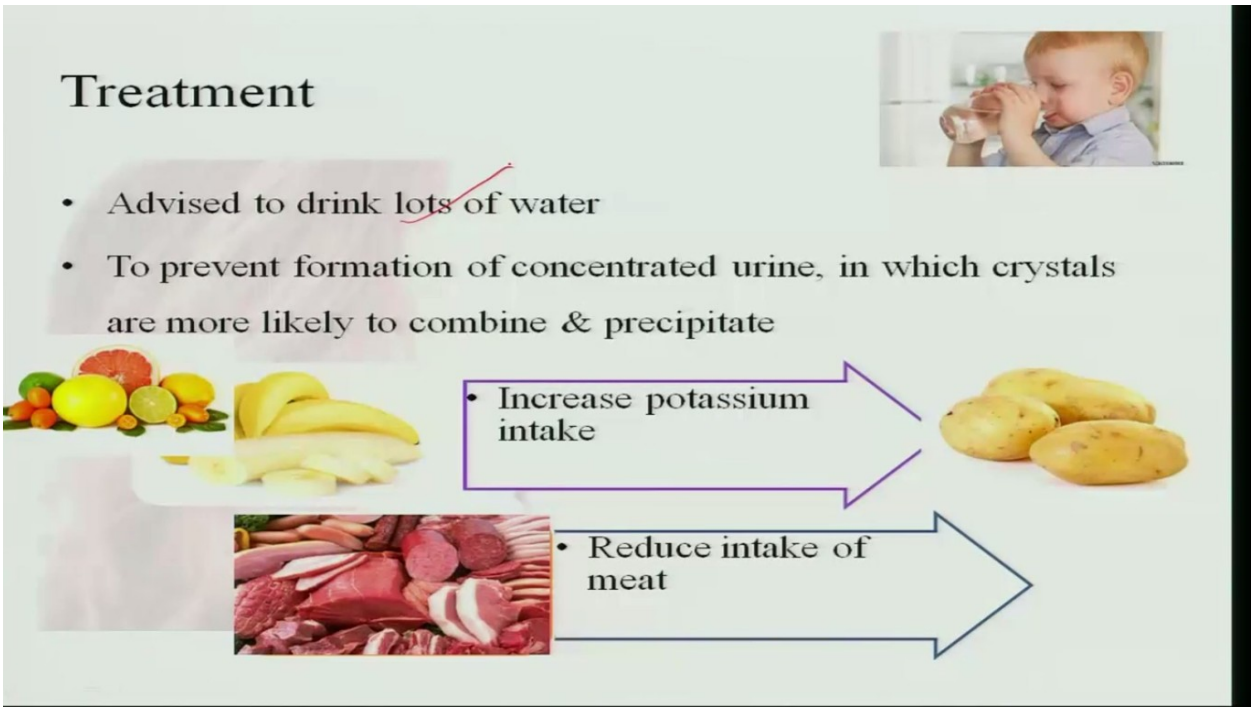
Symptoms

- Sudden severe pain with chills
- Fever
- Hematuria
- Increased desire to urinate
- A kidney stone can also pass out of the body with the urine

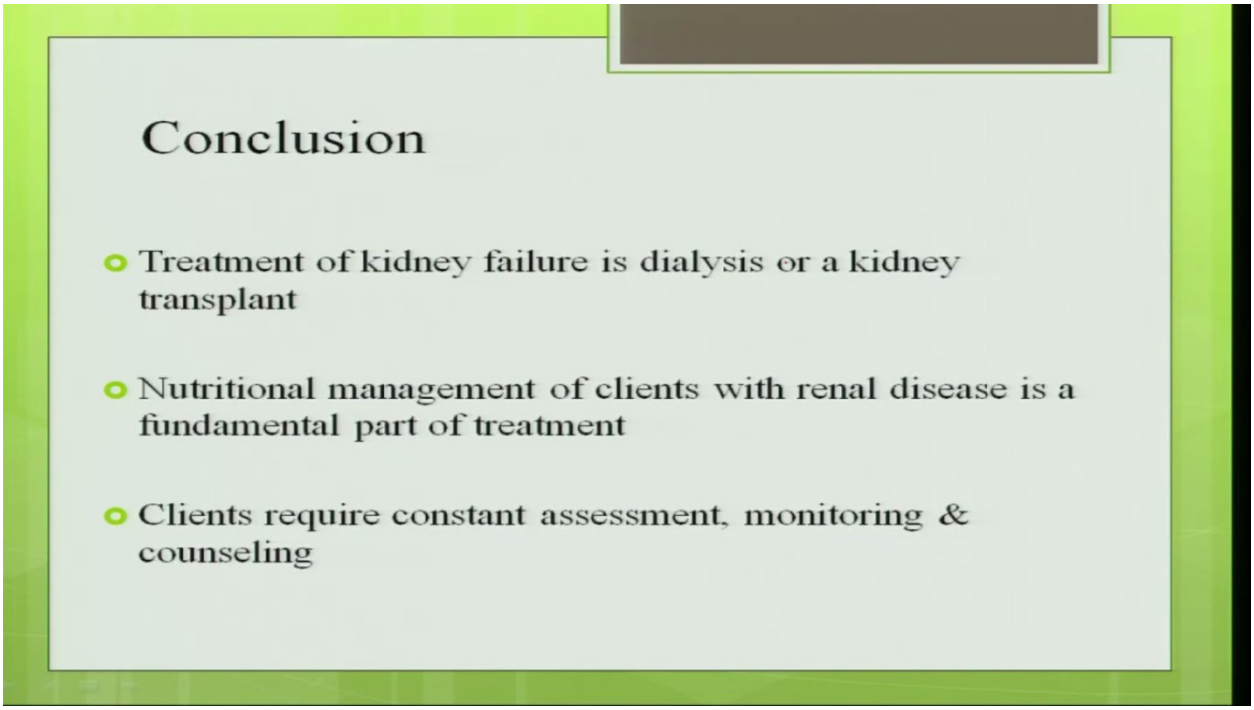
Now symptoms are severe pain and chills because urine is not passing out of the body. It starts producing chills, fever, hematuria, and increased desire to urinate. Then sometimes the kidney stone can pass out of the body without knowing also.



The simple causes of stones may be abnormal function of thyroid, parathyroid gland. Then disorder uric acid metabolism. So uric acid stones are formed and excessive intake of animal protein and immobility because animal protein when it gets metabolized it forms uric acid. So this excess of uric acid may form uric acid stones. So excessive intake of animal protein and immobility results in stone formation. And sedentary lifestyle this is also a higher risk because once you exercise the body also metabolizes the substances very easily and everything is in fit condition. So you have oxalate stones, calcium stones, and uric acid stones.



Now treatment will be you drink a lot of water so that the stone is pushed out and when the urine is concentrated there is a chance of producing the stones. So if you drink a lot of fluids the urine is not concentrated and crystals are not formed. You can avoid the stone formation. Then increase the potassium intake and reduce the consumption of meat.



When the kidneys are entirely filled they do not function at all the only treatment is kidney transplantation and dialysis also cannot work for a long time because it helps in losing lot of protein from the body. There is lot of muscle wastage. So nutritional management with clients of renal disease is a fundamental part of the treatment and if you save the kidney it is like saving the life of an individual.

Thank you.