Ayurvedic Inheritance of India
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Module - 4
Lecture - 9
Diseases

With today's lecture, there will be a change in the direction we have been taking so far. So far, as you know, we have been dealing with history, with philosophy, with health, but today we are moving to diseases; so, that is a major shift.

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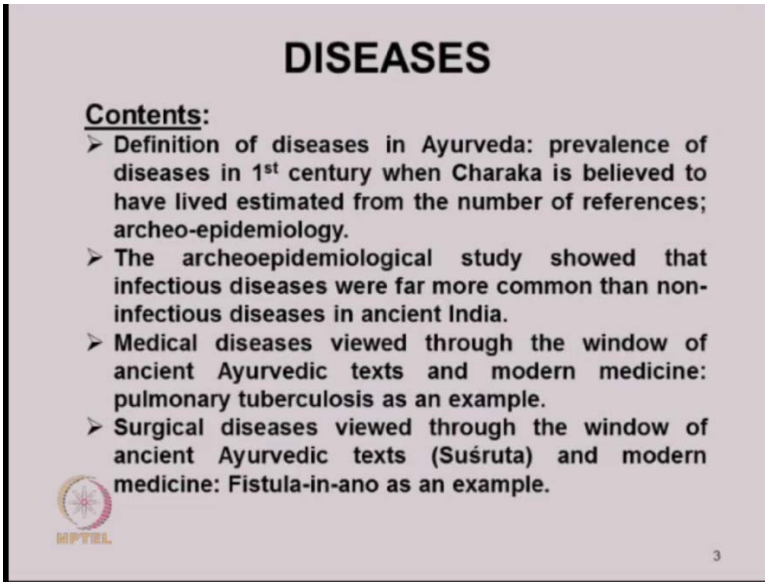

The contents of today's lecture will be as I have shown here. The definition of diseases in Ayurveda, which we have already referred to earlier, but we will be saying something about what I call archeo-epidemiologic study; that is, the kind of diseases which existent 2000 years ago; the prevalent of diseases, how things were at that time, to the extent we can get that information. It will be of some interest; that will be a subject I will deal with. Then, we deal with medical diseases; how a particular disease was treated in Ayurveda or is treated in Ayurveda, and how it is treated in modern medicine? Because we hear so much about holistic medicine, without any specific examples; so, there is nothing better to understanding something by than by giving an illustration, an example, so that we know how a particular disease is treated in Ayurveda.

When we say so much about holistic medicine, how exactly is tuberculosis treated in Ayurveda? How it is treated in modern medicine? That gives an idea how they differ; in what respects they differ. And similarly, a surgical disease also, how is it dealt with in Ayurveda? How is it dealt with in modern medicine? The two different approaches that I will be touching upon and there is a great upsurge of interest in Ayurveda globally. I will also briefly refer to that; that will be the contents of today's lecture.

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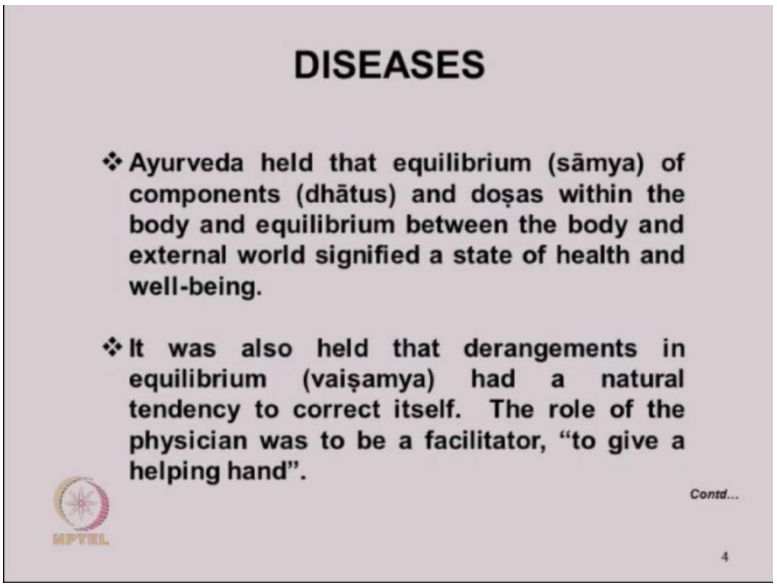

Now, when you look at diseases, this definition we have already said - It is a state of equilibrium in the body, of the body components are what are called dhatus of doshas; all these, when they are in a state of equilibrium, that is what we define as health. It is not just absence of disease, in other words. And it is the derangement or a disequilibrium that is what in Ayurveda constitutes a disease or a disorder. And as human body is engineered for good health, generally, all these disorders they will find order themselves. Most of the diseases will resolve on their own and the job of medicine is really to give a helping hand. This also we have touched upon earlier.

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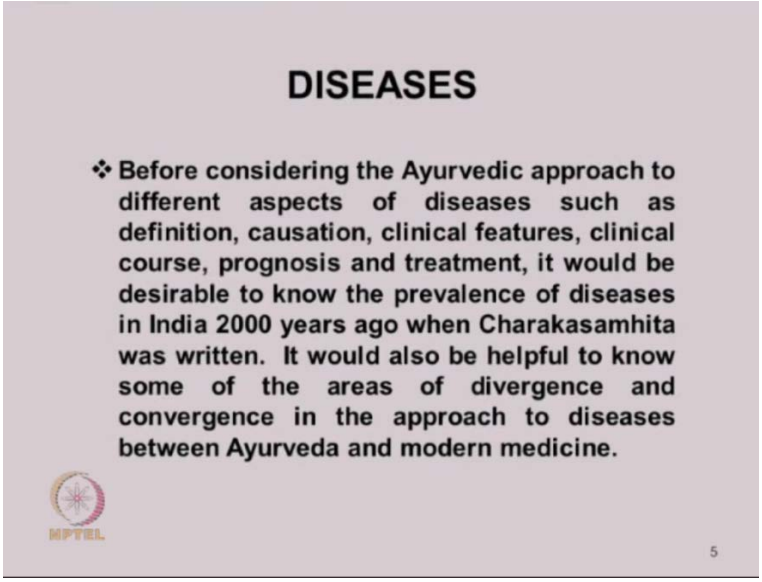

Then, before considering the Ayurvedic approach to different aspects of diseases such as definition, causation, clinical features, etcetera, it is of some interest know what kind of diseases existed 2000 years ago because much of what we have said is taken from Charaka Samhitha which was written in first century AD. So, when Charaka wrote this, what was the disease pattern in India? He lived in North-west India and this prevalence of diseases, that whole subject is referred to as Epidemiology. And there is a tendency for most of us to talk about good old days; the golden days of the past; this is an impression which many of us have. So, was it really a golden age at that time in Charaka's time? So, can we get any information about this?

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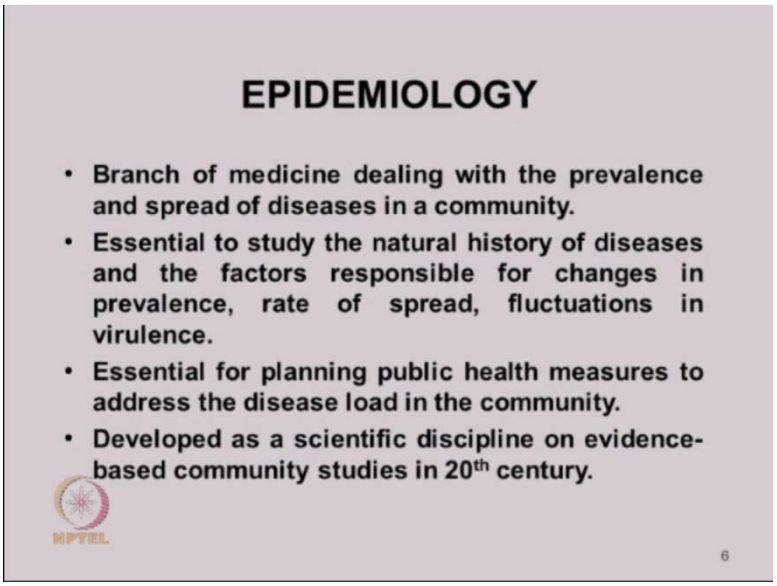

Now, Epidemiology, the subject which deals with this prevalence of diseases, spread of diseases in a community; this whole subject is Epidemiology which is rather new subject because in say 18th century or 17th century, if you went to Europe, they did not have any Epidemiology there, at that time. It is really a subject which grew in the 20th century or late 19th century. That was the time with the growth of statistics along with this; that is how Epidemiology grew. Now, it has become extremely important because only with this kind of information, you can do any kind of planning. If you know which diseases are more common; how common it is; the numbers involved; then only you can plan for a disease control, etcetera.

So, every country now including India, we have institutes of Epidemiology. There is one right in Chennai and their job is essentially to do this. Collect information on the prevalence of diseases, on the spread of diseases, changing pattern of diseases, etcetera because this is controlled today or hospitals paying setup, these are very large sums are involved; government investment, private investment, and unless they have this information, they cannot make intelligent investments. So, therefore, the kind of information on prevalence on the rate of spread, fluctuations in virulence disease which is highly virulent; aids, there is an impression that after 10 years it is not as virulent at as it used to be; this happens with practically all diseases.

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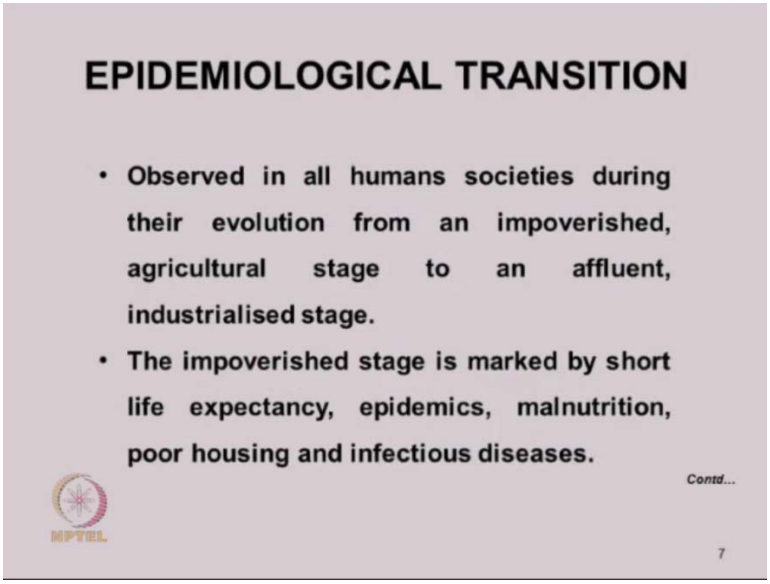

And this particular subject, the there is a Epidemiology when it started long time ago and today, what is one major difference that we are finding? There is what is called epidemiologic transition. Now, this transition in all societies, whether it is Europe or Africa or India, we see this pattern. It always starts with a country which is impoverished; who are low per capita income; public health's is poor; mal nutrition is very common. That kind of a society, typically like India gained freedom 1947, that is a landmark. And if you take the statistics at that time, our life expectancy was only 40 or less than 40; today, the life expectancy is 65. So, there is a very big change and many African countries life expectancy is only 35.

So, there is a big difference in a society where poverty is very common, malnutrition is very common, housing conditions are extremely bad; now, that kind of a society you will always find the health statistics are very poor; life expectancy will be low; infant mortality will be very high; maternal mortality will be very high. So, that is the initial stage where a community or a society beings, but then as the progress is being made socioeconomic progress, housing improves, nutrition improves, per capita income improves, life expectancy goes up. Then you will find slowly these infectious diseases, poverty related diseases, they slowly disappear, and people have more money; they have better nutrition; housing is better.

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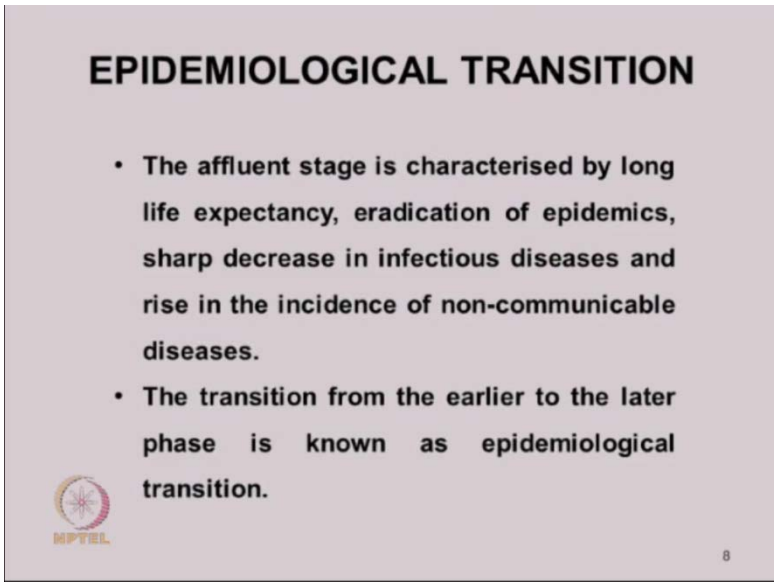

Now, that transition, when that takes place, you will find that like India is very much going into that direction; you can see the property compared to 1950 or 47. And today, poverty elevation is very significant; housing is very much better; people live longer. So, that is the Epidemiology transition; every society goes through this. Now, this is not because of medical doctors, Ayurvedic doctors, treating patients; that is all patients that is not correct. That is an impression which we should correct because the best example is in history.

Industrial revolution, as you all know, started in Britain. And when the industrial revolution started, large scale employment of specially in Lancashire, towns of Liverpool, and Manchester, large number of people, factories coming making things in large numbers, manufacture. So, thousands of people where finding jobs all coming to this town, and the town had no municipal facilities to house all these people. So, they simply collapsed, the municipal setup whatever they had. So, with the result, the laborers, their condition was extremely poor and the manufactures who are business people, they could not care less for the laborers; they were ought to make profit capitalist in full blast. So, that conditions, there is enough literature on this.

Epidemics were extremely common; Cholera, Tuberculosis was very common; mortality around children was extremely high. In fact, a mother who wanted to work and make money she would give opium to the child so that the child will not disturb; that is that

was the kind of inhumanity which prevailed at that time. Now, that time there were doctors there, and the doctors could not really treat all these. So, what happened? How did it change in the Lancashire at that time? It is a very good example. Now, this horrible situation in Liverpool and surroundings at that time, it changed not because of medical doctors, not because of the Government doing anything; it changed because of socially oriented people, good people, they got together; they said, this taking all these peoples to doctors it is no solution to this; they cannot solve this problem.

Tuberculosis - there was no treatment; Cholera - there was no treatment; all these, what is the point? We should do something else here, and they started these good people of Lancashire with no great leader, they are simple ordinary people like us. Clean water, clean air, well ventilated houses and two good meals a day sounds exceedingly simple and the doctors made fun of them, but they persisted and brought the result. In 2 years, the whole picture changed.

So, therefore, this a Epidemiological transition what we are talking about, medical Ayurveda or modern medicine, that can today take care of individuals or groups of individuals, but when you are talking about a community, a million people, that medical treatment cannot do anything; including Ayurveda. What really happens is a community, good people and the whole housing, their code of conduct; all these things become important, compassion for children, etcetera. So, Epidemiologic transition when we talk about, the real engine for that is not really medical treatment; that we should remember. In other words, more money and more science, lot of investment in science, that cannot solve this problem; investment in science, they can make machines, they can make drugs, but that will not solve this problem. So, if you want a solution at the community level involving millions of people - that needs a different approach. That, I think we should remember whenever we discuss the subject of Epidemiologic transition.

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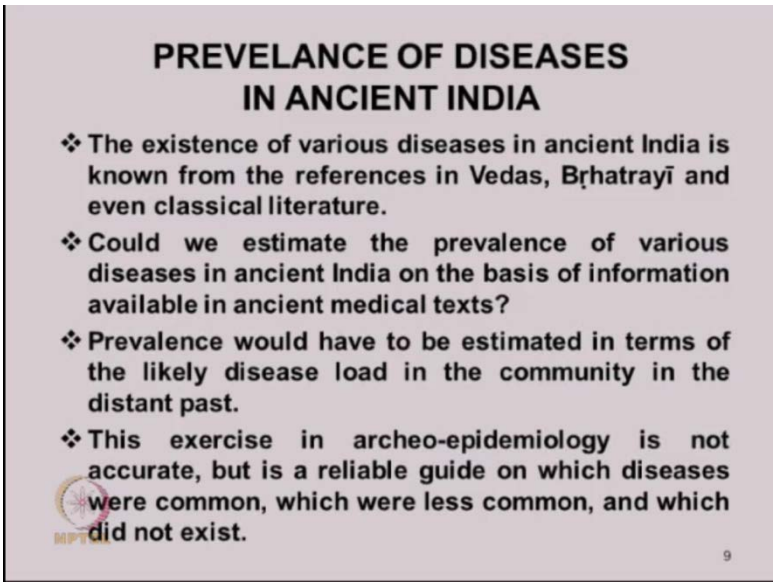

Now, prevalence of diseases in ancient India: This is a very interesting subject for being attenuate because we know that diseases existed; In the Vedas we have gone through that in great detail; the Charaka, Susruta, Vagbatta we have covered; large number of diseases are mentioned; they were there in those days. Now, is it possible to estimate the prevalence of these diseases? Tuberculosis for example. Now, that is a question we are trying to deal with. But then, in those days, you will not find statistics like 10 people out of 100 people get these diseases; they never had that kind of data collection. Even in Europe, For example, as I mentioned 18^{th} century or 17^{th} century, you will not find any paper; so many, for so many 1000s; that kind of approach was not there in data collection.

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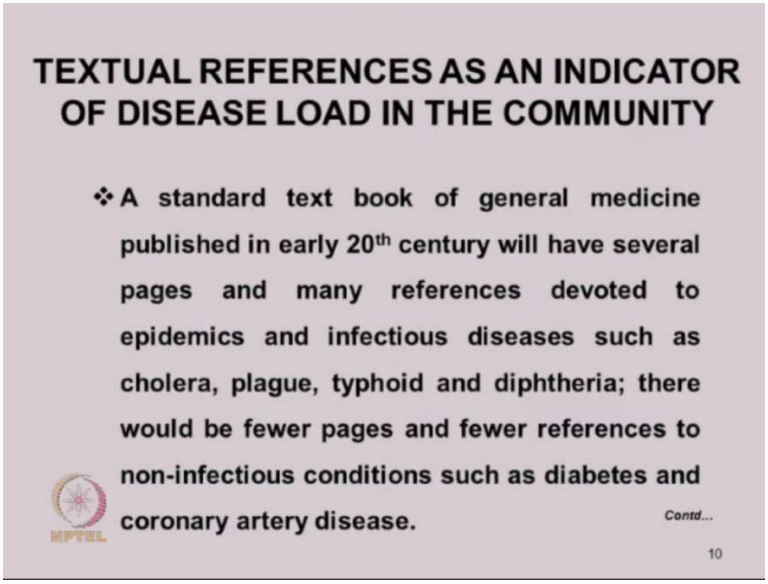

So, you cannot expect that in ancient India. So, therefore, what we are trying do is a very different approach; a disease load in the community is there somewhere you can estimate, and that the approach that we are using is something like this. If you take a standard text book of medicine, we have a book called Davidson, like Gray's Anatomy. This Davidson's text book of general medicine deals with all diseases. It is not a book for Cardiology or Nephrology, not that kind of book, a general medicine book which was a text when I was a student, 60 years ago.

Now, that book will deal with all diseases. Now, there you will find in those days several pages dealing with diphtheria, the typhoid fever, diseases which were extremely common accounting for a large mortality, but coronary artery diseases, there may be only 2 or 3 pages. There will be no reference to aids HIV, because it did not exist; nobody knew about that. But today, if you look at the same Davidson's text book, you will find diphtheria, typhoid, they are all 1 and 2, only 1 page or 2 pages, and you will find 12 pages of coronary artery disease; you will find 6 or 7 pages on aids HIV.

So, when you do this, this is a any standard book you will find this. In other words, the greatest stress is laid on a problem which is a big load on the community. That is how the priority is given in writing general textbooks because the doctors who are trained using this book, they should be trained to deal with that; this is the general approach.

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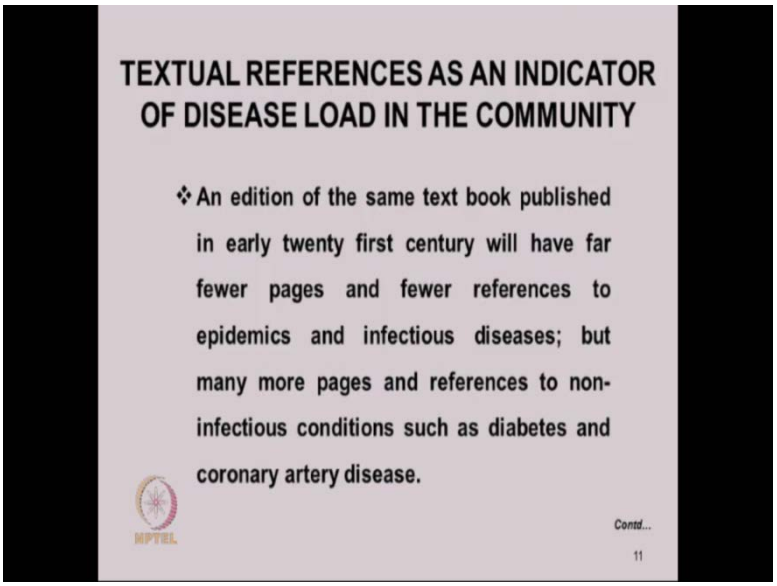

Now, the same thing must be true for a textbook in Ayurveda also. Especially a general book like the Charaka, if you look at Charaka Samhita written in 2000, you will find he devotes several pages to a particular disease, but you may find only small number of pages for another disease. There are not equally treated.

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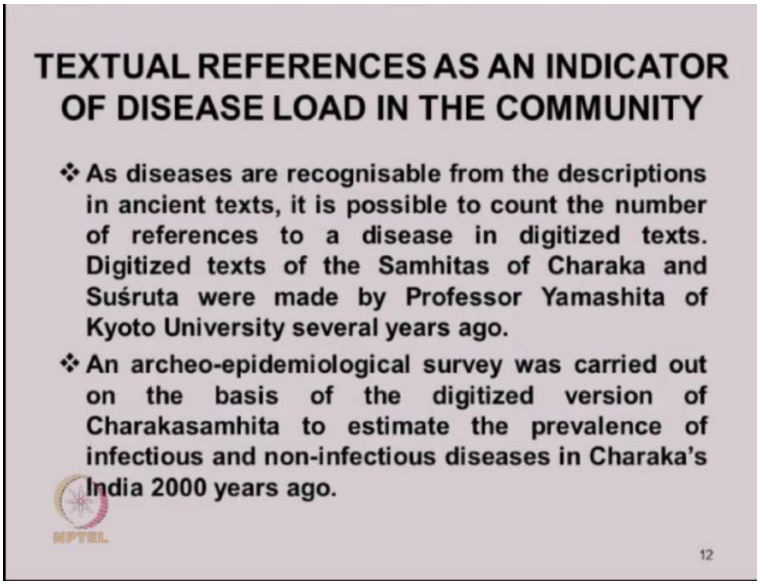

So, if you can have somewhere, but physically it is very difficult and you cannot keep on varying page after page, 120 chapters, how many, you cannot do this manually; almost

impossible to do that, but fortunately technology has helped us now. If you have a digitized version of this text, then you can count; the computer does the counting for you.

Just like if I was talking with my colleague a little while ago, there are people who get abnormal heart beats that are called dysrhythmias. Now, some of them are innocuous; some of them are dangerous. So, when a man comes and says, I have some palpitation, now in early days we had a problem because when you take him and do any ECG, ECG is normal. So, he is getting it some time when the doctor is not there; you cannot get an ECG done by the time he comes to the hospital that dysrhythmia has gone; this was a problem first. So, you have to admit him and connect to an ECG and keep him in the hospital until we find this. This is not easy as you know. So, now, we have technology has come. There is what is called a Holter monitor which is really a small ECG connected on his chest and he can go around, he can go to the office, and that is silently recording the ECG 24 hours or 48 hours. At the end of it, you get these tapes and the computer does the counting and it tells you - In 24 hours, there are 3, 4 episodes of these abnormal beats. Now, this is a similar approach.

If you have a digitalized version of Charaka Samhita, which a friend of mine Professor Yamashita in Kyoto University, he is a great scholar in Ayurveda; in fact his PhD thesis is now under Sharira sthana of the Charaka Samhita. So, he has digitalized this text. So, he was good enough to give me a floppy of this and there if you have chosen a certain number of diseases on your own criteria and it is possible to count. So, if you find the number of references that you make to a particular disease, a disease is referred to a 1000 times; another disease referred to only 50 times. Now, that gives an idea immediately that this disease was not so important as a point of view of the load on the society, now that is the approach that we used.

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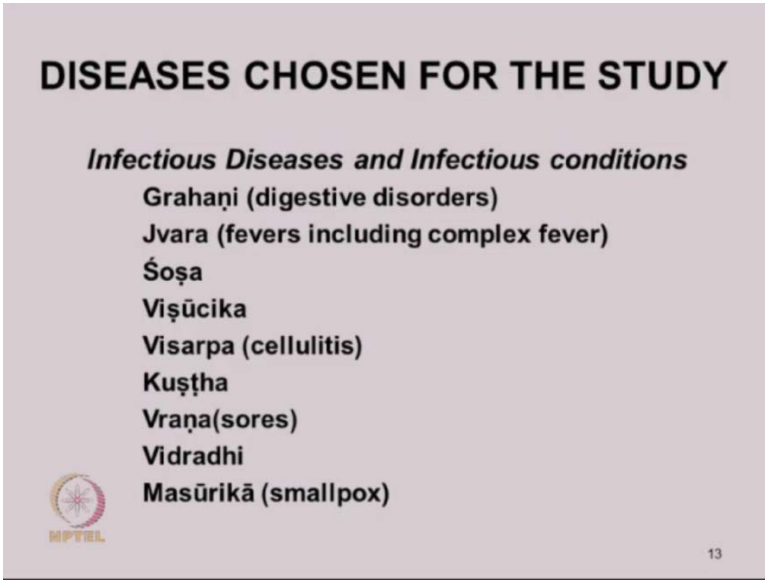

I choose 9 diseases pre transition; that is, these are all infectious diseases which are very common during the early stage of a society; when there is poverty, mal nutrition and so on. So, these are all infective conditions and infectious diseases like grahani, diarrhea, etcetera, jvara - fevers, sosha - tuberculoses, visuchika cholera, visarpa - cellulites another infective condition, kustha - leprosy, vrana - ulcers, vidradhi – abscesses, and masurika - small pox. These are the conditions which as shows; I thought they would be very common in the pre transition India.

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And then, non infectious diseases I chose Apasmara which is seshers - epilepsy, Arisa - piles, Gulma - gaseous lumps of the abdomen, Hrdroga - heart disease, Madatyaya - alcoholic disorders, Panduroga - anemia, Prameha – polyurias, mainly it is diabetes, Raktapitta - bleeding disorders; must be you do not know whether it is gastric ulcer or duodenal ulcer, but any way it is a non-infective disease, and Unmada - insanity. These were the nine non-infectious diseases or conditions which I chose for this study because nine are pre transition; nine are post transition; that is the ground on which I chose this.

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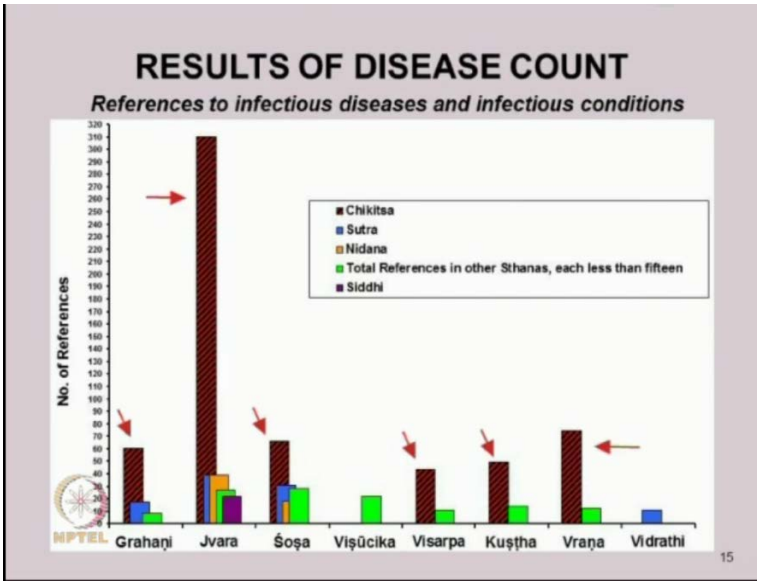

And then, here, if you look at this, this the red bars which stand out, these are the number of references to a particular disease.

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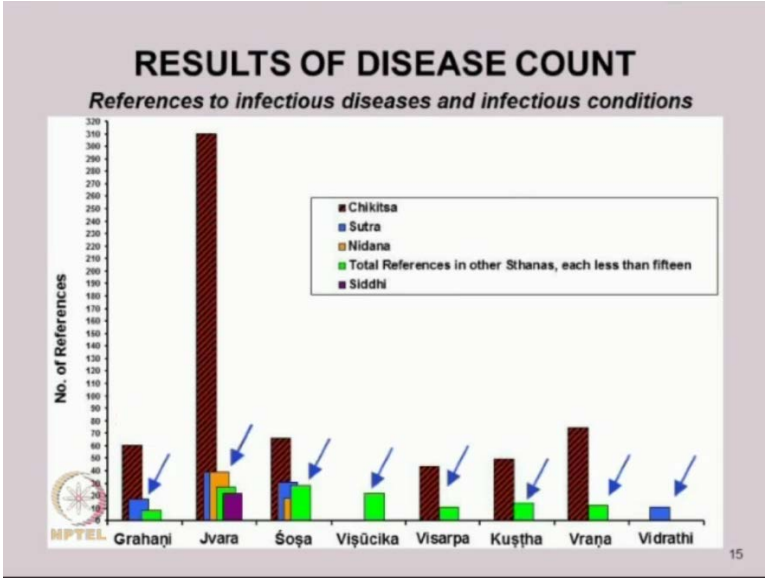

And the smaller bars which you see, which are not very significant, I will try to show that, these small bars which you see here, all these are references. These red bars which you see these are the number of references in the Chikitsa sthana of Charakasamhita because Chikitsa sthana deals with the treatment. So, that is, these are the red bars which are very prominent in all these, whereas all the others which you see, the smaller bars, these are the references in Sutra sthana, Nidhana sthana, etcetera. There is a reason for this because treatment dominated; that was the main reason these books were written. So, how, that is where you are likely to see the largest number of references.

Those who will notice that the treatment references are so much more than the reference to causation and so on because the very fact no body do the causation. So, the discussion is very very small; some of them insignificant. In that green bar is collectively all the references in the Charaka for these diseases which I have mentioned here; that is the first thing. So, the importance of treatment was so much more than all the discussions on causation, clinical science, etcetera, etcetera, that received much less attention because very little was known; that is the first.

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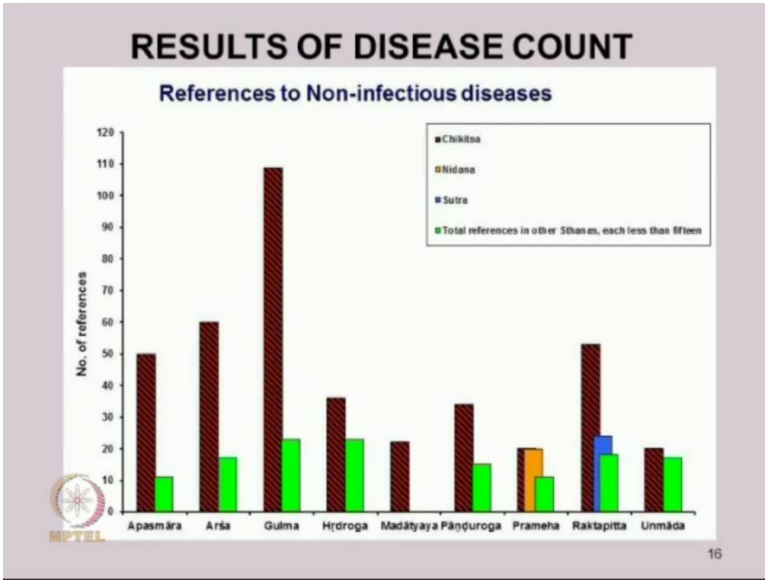

And these are the non-infectious; the earlier one was infectious. Now, I will show the actual numbers.

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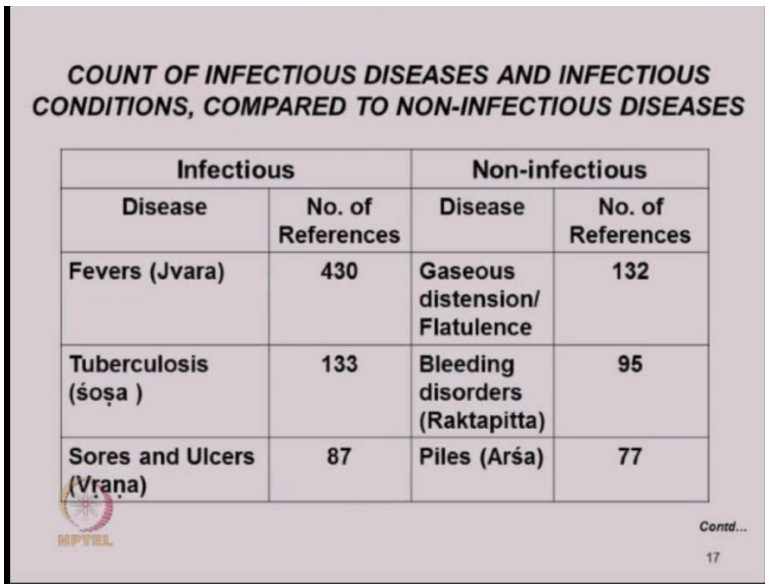

Infectious		Non-infectious	
Disease	No. of References	Disease	No. of References
Fevers (Jvara)	430	Gaseous distension/ Flatulence	132
Tuberculosis (śoṣa)	133	Bleeding disorders (Raktapitta)	95
Sores and Ulcers (Vraṇa)	87	Piles (Arśa)	77

Now, here, this is taken from that bar diagram. Now, here, if you look at the infectious is on the left hand side and non-infectious is on the on this side. And if you look at this like fevers, that is the largest number, 430 references. Now, this fever, that includes, it is collectively called Jvara; many of them are actually typhoid fever. When you read that it is very clear, but there could be other fevers also; viral fevers; we cannot distinguish that

they were not distinguished; those days it is called vishama jvara. There are fever which come on the third day or fourth day. They could be malaria. So, essentially, these fevers, they include all those; there are 430 references; tuberculosis there are 133; sores and ulcers 87.

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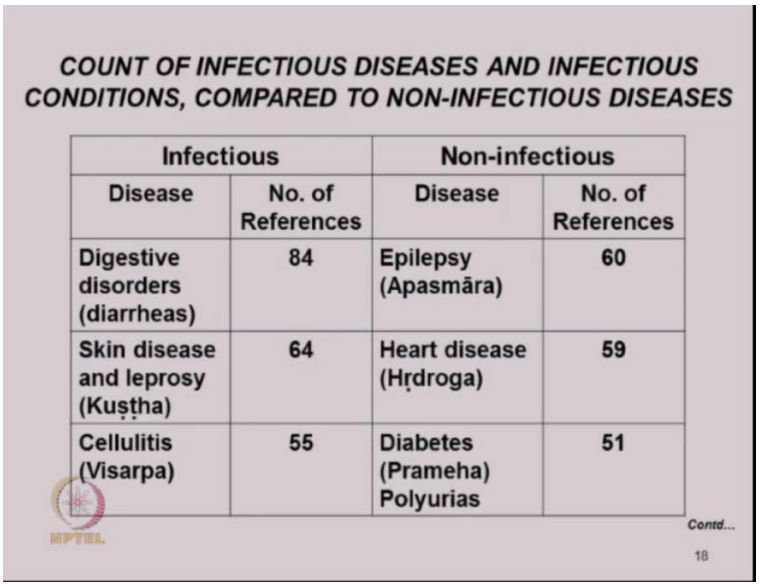

Digestive disorders – 84, like diarrheas, and skin disease and leprosy, they are combined. Kustha does not always mean leprosy; many other skin lesions are included in that; that is 64. Now, if you look at the non-infections, the largest is gaseous distension flatulence – 132; bleeding disorders - raktapitta that is 95; piles - 77, epilepsy – 60, and heart disease is 59; cellulites infectious again we continue cellulites - visarpa is 55.

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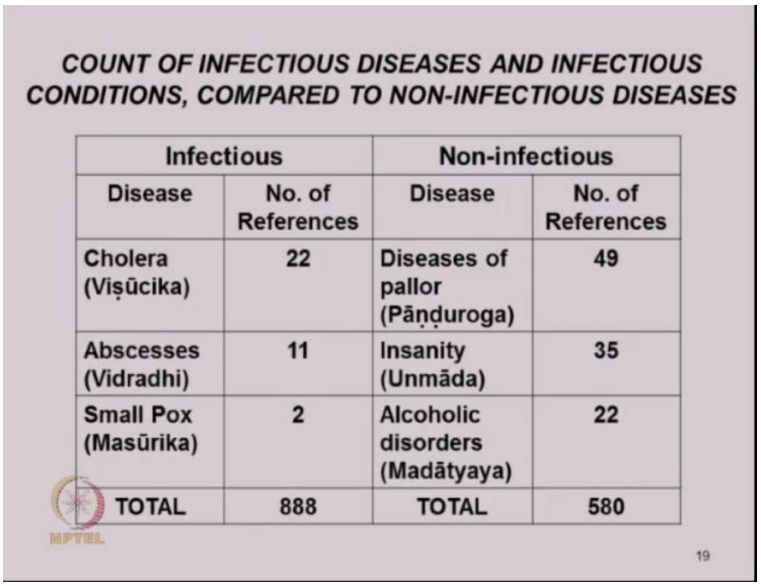

Cholera vishucika 22, abscesses 11. This is very interesting small pox - 2, and this small pox, if you look at that the description it does not look like the small pox that we know; it talks about a rash like masoor dhal, that is what it says, and it comes and disappears and that is very dangerous; that is all it says. Now, it is difficult for me to believe that small pox, I do not you whether any of you had seen small pox, because we do not see it now, fortunately. The small pox, if you have seen you can never forget it; it is one of the most awful diseases; how that comes and that how what initially is an eruption, that becomes a pustule and how these caps formed horribly disfiguring. If they survive at all, the mortality was 70, 80 percent confluent small pox for example; everybody dies.

Now, that kind of a disease, with an observant physician like Charaka, I cannot believe it will be dismissed in two references and those are dubious references; they do not look like small pox. The only conclusion, at least for me, small pox did not exist in when Charaka was practicing; it came later to India; there is no other. And there could be some other erective fever which could have been fatal; that is what he is talking about all into masurika.

In fact, P. V. Sharma, one of the great scholars in Banaras who translated Charaka Samhita, he calls it chicken pox; that is what he calls it this masurika. But he did not count it or anything, but from the description in Charaka Samhita, he calls it chicken pox; that is how ambivalent one is about this. But here, what is important to us is when

you look at all these numbers, you find only two references to masurika. That immediately puts a doubt in our mind. And non-infectious diabetes prameha that is 51 diseases of pallor, panduroga is 49, insanity is 35, alcoholic disorders - 22.

So, the total if you look at that, non-infectious 580 and infectious is 888. This is exactly what we would except an early part stage of a society pre transitions. This is the kind of statistics. Very much larger number of references to infective conditions and much less for non-infective; that is what we would expect and that is what we find here. So, the Charaka's time, we should not have the illusion that it was a golden period; it was not. That is why in the beginning itself he says, when a physician sees the patient, before you begin the treatment, you should ask yourself, is it curable? Is it curable with difficulty? Is it incurable? He himself knew that many diseases, they were incurable; he knew that like vishama jvara. When description goes on finally, he says you have to pray to Lord Shiva because there was so difficult to treat typhoid fever.

When I was a medical student, typhoid fever mortality was 30 percent. Today, we do not even admit them. So, in those days, it must have been much worse. So, this an exercise in Archeo-Epidemiology and what do we find for this?

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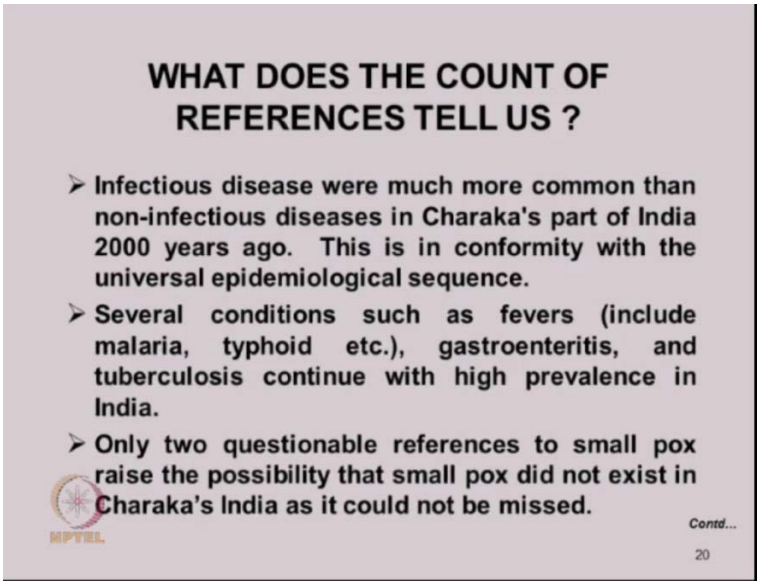

That is infectious diseases were much more common; that is we have already discussed it and this is in conformity with universal experience. And several conditions such as, fevers include malaria, typhoid etcetera; gastroenteritis and tuberculosis continue high

prevalence. Even today, we have not been able to control them and only two questionable references to small pox.

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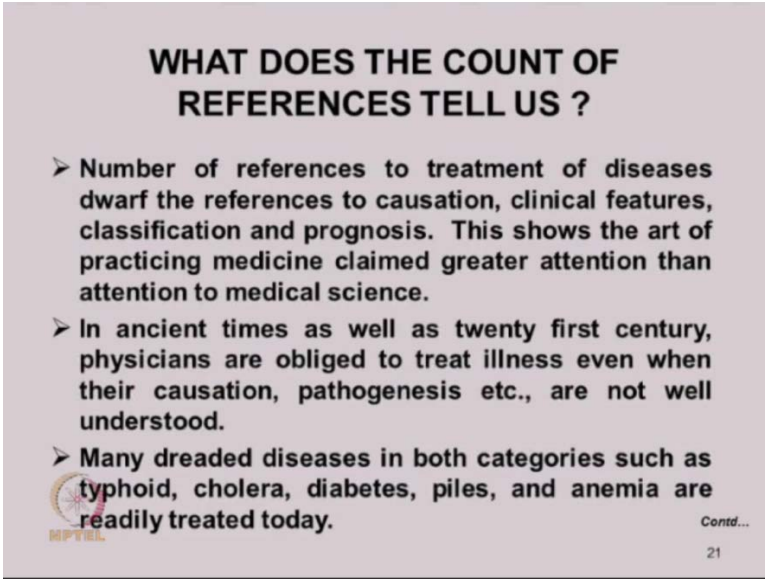

That is I think very important, and then we go on with other observations. A number of references to treatment of diseases which I said in the beginning, they greatly out-numbered when it reference to causation, clinical features and so on. Now, this is even true to some extent today. A disease may not be fully understood in terms of its etiology and scientific terms, but there will be we are oblige to treat them. When a patient comes we cannot say the etiology has not been worked out; so we cannot treat you. So, therefore, with whatever inadequate knowledge we have about a particular disease, you may still have to treat. So, the information, publications etcetera, on treatment with always be more than the work being done on causation and other aspects of a disease.

And in ancient times as well as 21st century, this is the point which I made now, but interesting. Many dreaded diseases in those days like cholera, typhoid, diabetes, piles, anemia these are no longer the matter of concern; we can easily treat them; we can very satisfactory treat them.

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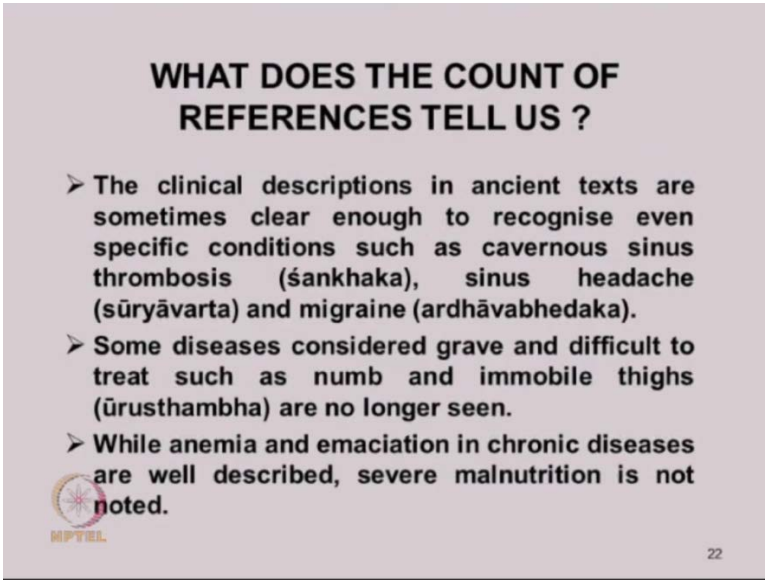

But another important observation is now rare conditions which we see, they existed even at that time. There was a disease called Sankhaka and this Sankhaka is exactly cavernous sinus thrombosis, very dangerous condition that is a big vein's sinus inside the head through which number of important structures including nerves pass, there can develop infective thrombosis endangering life. Now, they are existed at that time. Similarly, sinus headache – Suryavarta, that existed at that time; migraine existed. So, many of these, these are not very common conditions, but very troublesome difficult to treat; now they existed in Charaka's time also. And then, there is a particular disease called Urusthambha which was considered very dangerous by Charaka. It is not paraplegia; this both legs become swollen; patients are very walk with very difficulty; they have loss of sensation and these are not amenable to the usual Ayurvedic treatment of panchakarma and he talks about how dangerous it is. In fact, very few survived. So, there is a whole chapter on that disease, but we never see this Urusthambha today.

In fact, the Acharya from whom I learned Charaka Samhita, I asked him - have you seen this? He said - No, I have not seen it. He was already 82 when I met him, but he said his Acharya had seen. Now, is there any disease where both legs are swollen, patient is able to walk; it is not paralysed; sensations are there; there is a whitish color to the leg; that is all written there and fatal; what is that disease?

The only time is it is a matter of sheer intellectual interest; there is no other reason. And there is one condition in the modern medicine; this is no longer seen today, but in the 19th century; obstructed labor people, woman, pregnant women, the uterus is pressing on the pelvic veins, and sometimes labor there is complexity and it is not easy to approach a physician or getting a daayi to come and look after; she could not do much anyway. So, that kind of a difficult very poor obsterity care; there the veins get thrombosed. And in western medicine, there was a condition which was we remember it because the name is a very interesting name phlegmasia alba dolens. That is the name of the disease. That is how we remember it because it is an unusual name. Phlegmasia is affecting the vein; alba is white; dolens deals with pain. So, here, you have a painful white leg; that was these women because the vein gets thrombosed; so, the legs become swollen; it is very dangerous because the next time a clot will go into the pulmonary artery and they will be dead. There was no treatment. Now, in those days, they must have had phlegmasia alba dolens in India which they had in Europe in 17th 18th century. Even nobody sees that now. It is a disease existing at that time which has disappeared mercifully.

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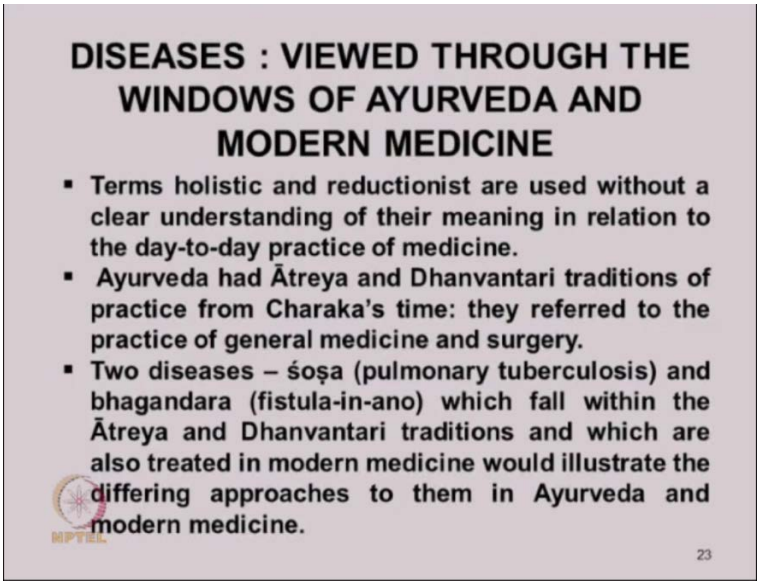

Now, we come to the, so that is your exercise in Archeo Epidemiology, and this approach incidentally can be used for many other things. Suppose, you want to know Charaka's 1st century, medical treatment of a particular disease, and in the 6th century of Vagbhata, how was the treatment different? How often was enema used for a particular treatment? How often was purgatives used? Or various other questions; you can use this

approach. All you need is the key words. You have a digitalized version and you can get very interesting information. You may find that a particular treatment was used by Charaka; it is no longer used by Vagbhata in 6 centuries; that is reasonably accurate information. So, this approach which we have used for Epidemiology, it can be used for example, interested in using a particular medicine of plant, how often was it used in 1st century? How often he was used in the 6th century? So, there are a number of things you can count and estimate by using this approach.

And then, we move on to which I mentioned. It is of some interest. We always say Ayurveda a holistic. This is a vague term for me. I do not really know what it is; holistic. Everywhere I hear holistic. I have a vague idea, but that is not good enough. I would like to know, a particular disease, how is it treated in modern medicine? How is it treated in Ayurveda? Take an Ayurvedic text, a standard text like Vagbhata well-known used very extensively by Ayurvedic physicians. Based on that, what is the optimal treatment of Tuberculosis and how is this treated in modern medicine? You take a similar text like this. What is the recommended treatment?

Now, if you look at that very specific, you do not have to talk in terms about holistic and that way you do not get into any specifics at all, like when you are doing biomedical engineering, you we have a colleague here. Now, if you say bio compatibility, that is a vague term, but if you take a specific thing that you are saying that this is blood compatibility and this is the reason for it; so many months or years it will remain free from clotting. Now, that is something we can understand; otherwise bowed compatibility; it is a big term implying too many things. So, here, this is what we are doing.

If Ayurveda, holistic treatment, tuberculosis; obviously, it has to be holistic. Now, this is what it is. So, a specific example I have taken. One is from the Atreya, the medical tradition which is Tuberculosis; the other is Bhagandara - anal fistula, a common condition treated in Ayurveda; even now being treated and commonly treated in surgery today. How do they differ? That is what I am trying to do here. Both these traditions are there. Ayurveda had Atreya and Dhanvantari traditions from old times because Dhanvantari tradition is even older than Charaka tradition, Atreya tradition because when we look at the classification of Ayurveda, the very first is shalya; that is surgery. So, it is an ancient tradition. We have gone through that earlier because there is reason to

believe that Susruta lived even before the Buddha. So, the surgical tradition of Ayurveda goes back to that past. And surgery is more recent in modern medicine. So, both these are conditions often treated in both these branches of a medicine, and two diseases which I have chosen, pulmonary tuberculosis and then anal fistula, they fall in well-known traditions of this modern medicine.

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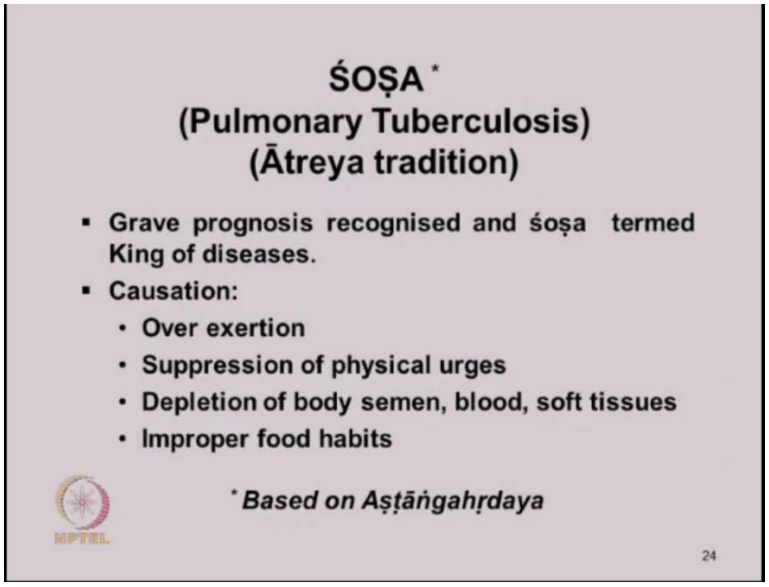

And if you look at Tuberculosis, this I have taken from Astangahrdaya, there is a great prognosis was recognized. In fact, it was called Rajayakshma; it was the king of diseases because they knew; extremely dangerous. And the causation when was over exertion, suppression of physical urges, depletion of body semen, blood, soft tissues. So, wasting actually precedes and improper food habits. Now, this is interesting; depletion of soft tissues in other words wasting. Ireland you may I do not know whether you have heard about the potato family. In the 19th century, may be 2 million Irish people, they immigrated to the United States and United States was not all that prosperous in those days. But the reason for this huge exodus of a small island like Ireland, that was potato family. Because of a disease affecting the adversary staple food and because of this disease, the potatoes just vanished.

And Irish people, they were facing starvation and one of the options for them to survive was to go away to the United States, an unknown country in those days. Now, at that time, one of the things which happened with this famine and severe malnutrition was

Tuberculosis. So, there is something in this because if there is a situation where there is extensive malnutrition, severe malnutrition, then you can count on it; tuberculosis is going to be there; this is what happened in Ireland. So, when Vagbhata says that this wasting, there is something in what he says. We did not face any famine release; we have no data. But if there is such extensive malnutrition of that degree, then that can predispose to Tuberculosis, improper food habits; these are the causes which Vagbhata mentions for sosha or Tuberculosis.

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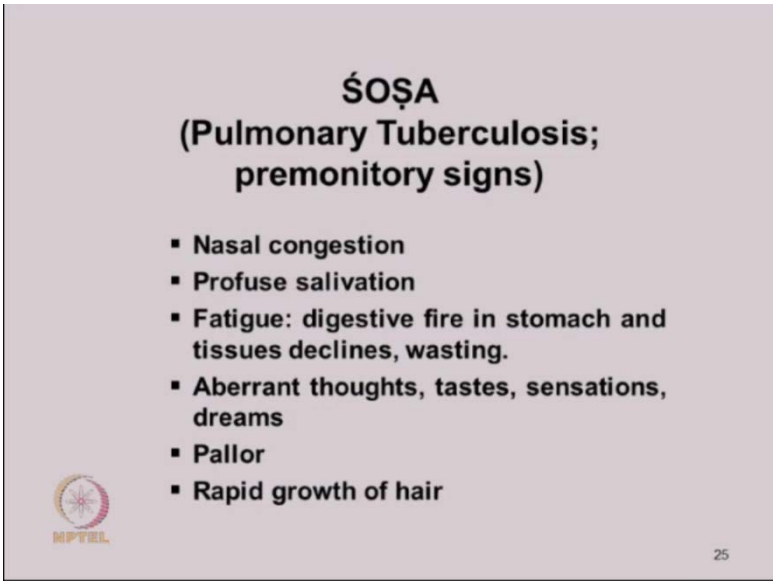

And then, premonitory signs: They remember the staging of the disease; how it starts with chaya, the accumulation of doshas; then, they spread perturbation; there is a stage in which we have 5 stages. And there, this premonitory stage is there. At that time, the disease is becoming recognizable. Now, there nasal congestion, profuse salivation, fatigue, digestive fire under stomach and tissues declined, wasting begins. This is wasting caused by the disease; aberrant thoughts, tastes, sensations, that dreams, pallor, rapid growth of hair; these are all mentioned as the premonitory signs.

Incidentally the dreams he is talking about, I do not know how many of you are familiar in the 19th century Tuberculosis was a fashionable disease. In other words, if a talented poet like Keats, many of these talented people died of Tuberculosis; painters, musicians. So, it became almost like today coronary artery disease is a snobbish disease. All the big people they have a coronary artery by-pass. So, it becomes fashionable to say I also had

a coronary artery bypass; sounds silly, but it is a fact; there is a club people who get these diseases.

And in the 19th century, Tuberculosis was a fashionable disease. If you are a highly talented poet, you have to have Tuberculosis. And they had dreams; when I see this mention of dreams and they had, their eyes were shining; all these descriptions you can read. In fact, in Malayalam we had a great poet called Changampuzha; very talented poet; he died young; he died of Tuberculosis. I remember that he was respected, admired because his eyes were shining and the glow of talent, all those. Then I have always reminded this was what happened in 19th century in Europe; every every so many great poets had Tuberculosis; so many great painters, shop shop and the great composer, a polish who lived in France, he died of Tuberculosis. So, therefore, there is a certain amount of romance associated with Tuberculosis. So, dreams when he talks about, Vagbhata must have scenes about this in those days. At least I have that feeling and pallor and rapid growth of hair, these are all the things which a premonitory signs.

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And then, food loaned a clinical signs and symptoms. There are 11 of them. Nasal congestion continues, repeatedly mentioned, difficulty in breathing, cough with expectoration, but seriously, in this cough with expectoration he does not mention hemoptysis. It is very surprising; Vagbhata. Pain in the head and shoulder, hoarse voice, there is tubercular laryngitis, poor appetite, loose stools, constipation the alternate,

vomiting, pain on the sides that is by repeated coughing, fever and joint pains. These are the 11 signs and symptoms they need not all be present in the patient, but these are extremely important as we go a long in the management of this patient.

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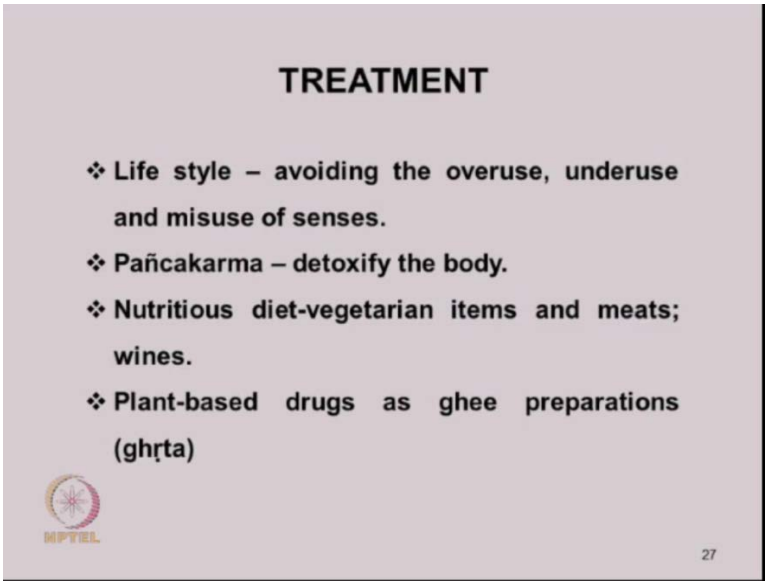

And treatment, life style avoiding overuse, underuse and misuse of senses like taking a lot of wine; wine was encouraged; as part of the treatment it was given, but suppose he keeps on taking more, that can produce a counter result. So, therefore, the use of senses, the appropriate use, that is very important; second panchakarma - detoxifying the body, because we have seen from the prodromal stage itself, doshas are perturbed and they are spread all over and you have got to evacuate these. It is not enough to do samana, a mild treatment. So, you have to follow the course of snehana, svedana, then, you have to have panchakarma treatment to eliminate from upper part of the body by vomiting, enosis, lower part of the body if there are symptoms, bowel symptoms as you have seen; then, you have to have virechana or enema. So, appropriate type of panchakarma will have to be administered repeatedly. So, that is the main stay as far as clinical procedures are concerned; the nutritious diet, vegetarian and as well as non vegetarian.

Now, here, Charaka talks about carnivorous meat. I do not know whether I can remember whether Vagbhata also mentions it; I think he does; ashtanga sangraha does; I am not sure of ashtangahrdya. But there, normally you eat the meat of animals with who have which are vegetarians like deer etcetera. You do not eat the meat of carnivorous

animals like tigers and lion. There is an aversion to using that for some reason. But in this situation, a wasted tubercles patient, this is given as a treatment, a carnivorous animals meat, and if they know, they will not take it. So, it is considered alright, if you can even mislead them; tell them a white lie - this is a deer's meat. And if he does not recognize, you can smuggle it in carnivorous meat because that was considered important to build up his system, his resistance, his tissues, because samanya we discussed at vishesa, we have to build up his muscular system, muscles in the body. Then you have to give something similar. Then only you can build it up that is samanya. So, here, nothing can be more similar than an animal's meat and they consider carnivorous meat was even better. So, meat non vegetarian diet was very much encouraged, and the use of wines. And plant based drugs, there were a large number of medicinal formulations, ghrta especially prepared in ghee; very large number of them are described for the treatment of these.

Now, whether any of these that is an area, whether any particular molecule from these plants which have anti tuberculosis property, that sort of a research we have done for so long and we have found nothing. In fact, that search has been futile. We have not succeeded. Something, we have either there are no such molecules in these drugs or we have failed to find one or the other like artimicine in the Chinese found for treating falsi for malaria from their 2000 herbal preparations. They succeeded dramatically in a matter of 10 years; highly focused search. Now, here, I would have though all the research that we are doing on herbal drugs. This is something I have not understood. Our strategy is we seem to have gone wrong because tuberculosis is still a very big problem in India; we will not eliminated them.

And if you want to treat them, like streptomycin was found; that made a huge difference to the management. I was in the medical college when it was discovered. Prior to that western medicine also we had no treatment; only sanitary are being built; they are isolated; that was a very different world. But once the PAS, Streptomycin, Isoniazid, once this combination came, the whole management of tuberculosis changed; you did not have to build sanitary. Can you imagine 2 million people in sanitary? So, physically impossible; no country can afford it. So, the domiciliary treatment of Tuberculosis became possible only because of antibiotic treatment.

Now, if we had in these, let us say the number of plants used in astangahrdya, if there are 50 plants being used in making all these formulations, obviously, with that we are not able to control Tuberculosis; even Ayurvedic physicians agree, but then what have we done? These 50 plants, can you isolate the molecules. And can you treat it for controlling that bacterial culture of mycobacterium tuberculosis? Is there some such research that one could do? In the so many years 50, 60 years, we have not been able to do that; all source of searches go on.

Every ayurvedic journal you take, there will be something about medicine of plants, but here is a problem. If you take these, whatever number of plants are mentioned and you take the molecules from that, today we have the technology for it; big machines are there; rapid throughout screening, etcetera, etcetera. You can screen 10000 compounds in 5 minutes; that sort of thing they do. So, is there some way the people working in this area.

So, we have really not been able to. We still have to use the Krida which was prepared by Vagbhata; we are still using that. By the molecular level search, we have failed; we have not been able to do anything and I feel it is a failure on our part. We have not done our duty to Vagbhata because at that time, that was all that was feasible. It is a very big step forward to identify these 50 or 60 plants out of millions of plants. That is a huge step forward. They have made a short list which could have been done only by great experience and great effort, but we have to go further and that we have not been able to do. So, therefore, the approach here is the plant based drugs mostly in the form of ghee based preparations.

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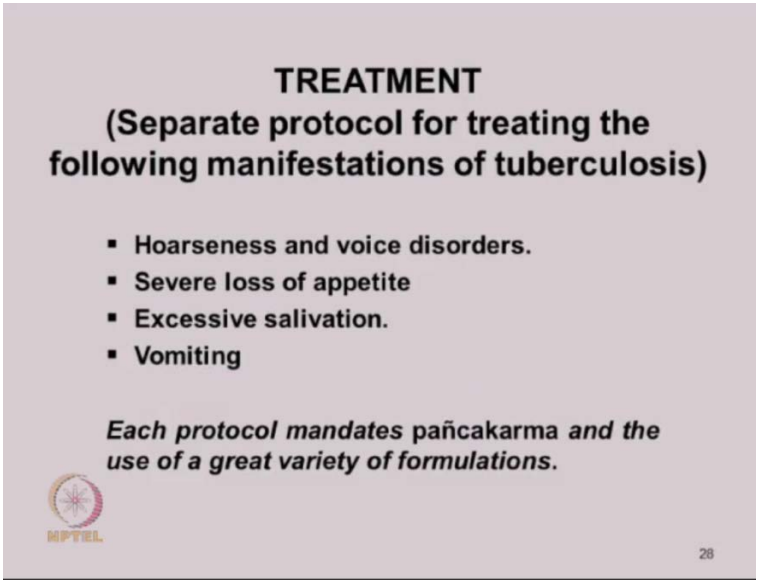

But then, this treatment becomes much more complex in Ayurveda because all these like hoarseness and voice disorders which are very common in Tuberculosis, severe loss of appetite, excessive salivation, vomiting, all these, these are gastro intestinal manifestations of Tuberculosis. Sometimes there may be severe laryngitis or it may be intestinal Tuberculosis. So, all these could happen; secondary infects of pulmonary tuberculosis. So, each one of these, there is a separate protocol for treatment. They are almost treated like separate diseases. So, it is just as specialized treatment as pulmonary Tuberculosis itself.

So, when you put all these together, patients coming to you, they will, somebody with pulmonary Tuberculosis, he may also have tubercular laryngitis. So, the treatment of these when you combine, it becomes really very very complex. So, that is the summary of the way it was managed in that time. Now, if you look at the contrast it with the modern medical approach, I have taken 1960 onwards to make sense, because prior to antibiotics, prior to streptomycin pass isonikes tuberculosis treatment in modern medicine was not very different from Ayurveda.

So, when I joined the medical college in 1951, what was the management of Tuberculosis like? First of all it was dreaded - the Tuberculosis, and then patient had to go to a sanatorium, if those who could afford; there were very few sanatoria. In the whole of a Travancore state where I was born, there is one place in Nagercoil; that was

the only sanatorium in the whole state of Travancore. And only those who could afford would go there and what was the treatment? Good food - that was one; regular food, lot of milk is given to drink, etcetera, eggs would be given; meat was not given that much; some may be given. But treatment wise, there was nothing; some calcium would be given; things like that. There was no, if there is cough, there will be some cough medicine. There was no way of treating Tuberculosis. This was the condition in western countries and to some extent Vellore started late 1950s tubercular cavity in lung; you could remove that cavity; surgical treatment of tuberculosis, thoracic surgery.

And if there was already a cavity ruptured, there is puss in the thoracic cavity, that could be treated; that could be drained; that was all the thoracic surgery in those days. Thoracoplasty - you will move all the ribs so that if the lung does not move, lung is immobilized; that is done by removing all the ribs; then, the chest valve would collapse; that is called Thoracoplasty; this kind of operation, only very few institutions could do that and Vellore was one. There was an American surgeon called Reeve Betts who really started thoracic surgery in India and that was the kind of treatment they had. If somebody had a cavitory tuberculosis and it developed an empyema - puss in the chest, in Travancore, his only choice was to go to Vellore to get this done, and mortality was very high, as you can only imagine. This was the condition prior to antibiotic.

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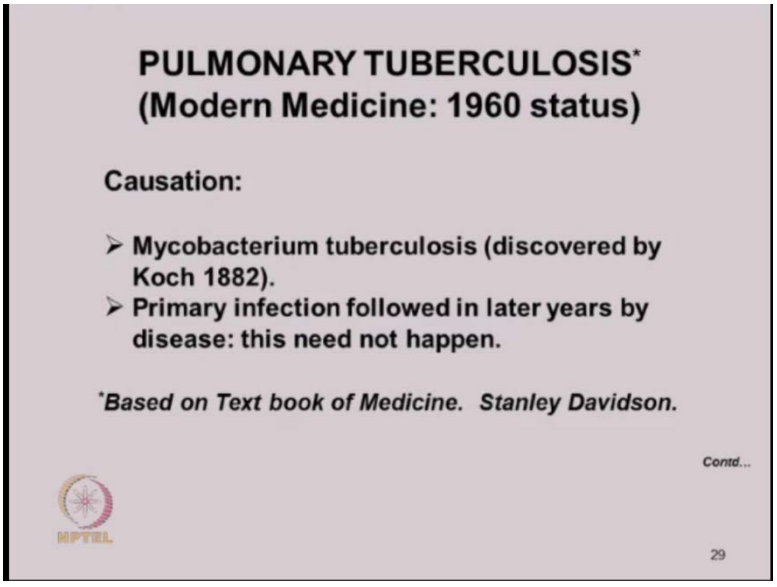

So, therefore, the kind of treatment does not make any sense to talk about it from 1960 onwards and Davidson's book I have used, and there you find the mycobacterium tuberculosis was discovered in 1882 by Koch. And prior to that, it was even more horrible because all these diseases, they were considered separate diseases. Whether it is tubercular revengities, tubercular arthritis, tubercular intestinal (()) tuberculosis, all these were nobody do the causation. they were all different diseases. You can well imagine the kind of management which must have taken place in say early 18^{th} century. How it is not good old days; they were bad old days; no knowledge, no treatment, simply groping in the dark and giving a whole lot of medicines which we knew were thoroughly ineffective.

This is why Walter, he make that famous statement - is it medicine, the doctors give drugs about which they know very little putting into the body about which they know even less. That was very true because that is what happened in those days. We simply had no idea. It was Koch who discovered the mycobacterium tuberculosis. Then we found that this is what is producing all these; whether it is in the joint or the lung or the larynx, it is one cause that was a huge change and they approached the treatment of tuberculosis. And the primary infection in the chest, in the lung, that may be very small; it may controlled; may even be ignored, but some of them, it will be followed by progression which we talked about in the discussion on srothas.

The first attack of tuberculosis as a small lesion that may not produce any symptoms at all, but that is where it starts, and then by the time it develops into pulmonary tuberculosis, a lot of time has passed; weeks or months. During that time, what is happening in the body? Where is it happening? How is it happening? These are the disease process exteriorly important.

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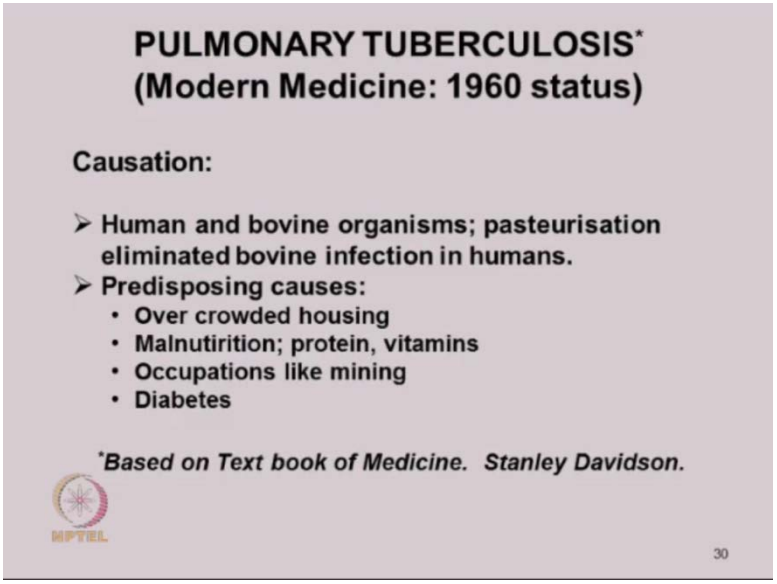

Now, here, you see that primary infection is followed years later by the development of a full known disease. And the human and bovine organisms, that bovine organism tuberculosis also has been occurred through milk; that was abolished by pasteurization. Forever, you do not see that now; otherwise, in prior to pasteurization, especially in Europe, it is very common. They have banderol tuberculosis in children because of this bovine tuberculosis; we do not see that now.

And predisposing causes: over crowded housing which I mentioned Lancashire is an example. During industrialization, several people crowding and living in one room, Malnutrition, protein, vitamins, especially occupations like mining; mining, if you go to a place where mining is going on Rajasthan and UP, you will find where there is a lot of silicosis. Invariably, they get silica dust; people working in the mines, you will find almost 60, 70 percent of them get Tuberculosis. They themselves recognize it because they consider this is because they have no choice; that is the only way to make a living. There are number of social studies. You still find them people are ready to come to work there because they have no choice; otherwise it is starvation.

So, they know that my father got Tuberculosis; I will also get it. They accept it because there is no choice and the industrial conditions are so bad. We have an industry act where how to deal, the condition should be given, but there, those conditions are seldom observed because if you want to observe all those conditions, then the profit margin

comes down. So, therefore, the conditions in the mines are so bad; industrial conditions. So, the pulmonary tuberculosis incidents are externally high. And diabetes - that is a well known predisposing cause.

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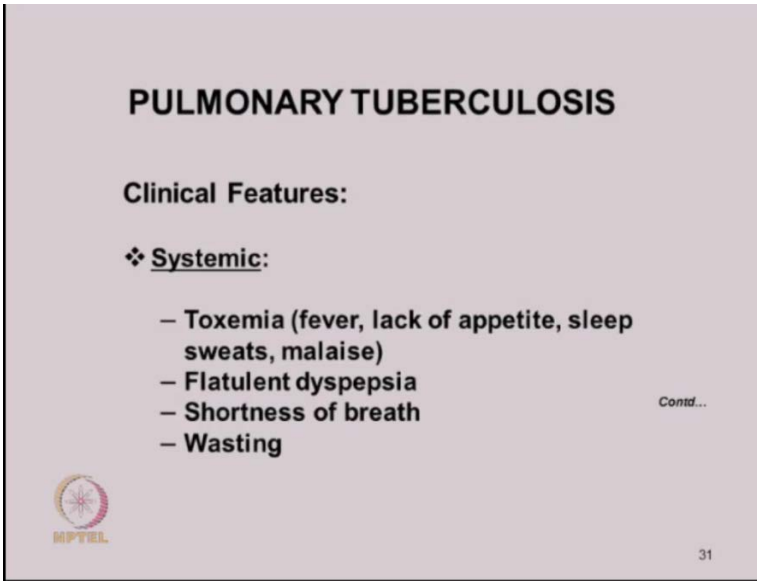

And clinical features: Systemic toxemia, fever, lack of appetite, sleep sweats, malaise flatulent dyspepsia, shortness of breath, wasting. You will find the clinical symptoms are very comparable.

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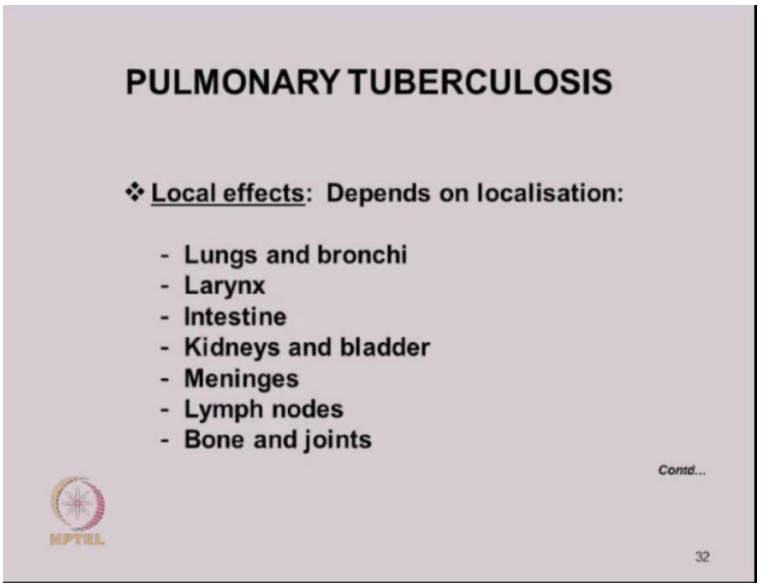

Local effects that is where the, this is only possible to detect after cough discovery. We know that lungs and bronchi, larynx, these all are being produced by the same organism which was not known before cough; Intestine, kidneys and bladder, meninges, lymph nodes, bones and joints. I have given the common manifestations of Tuberculosis which we see in hospitals.

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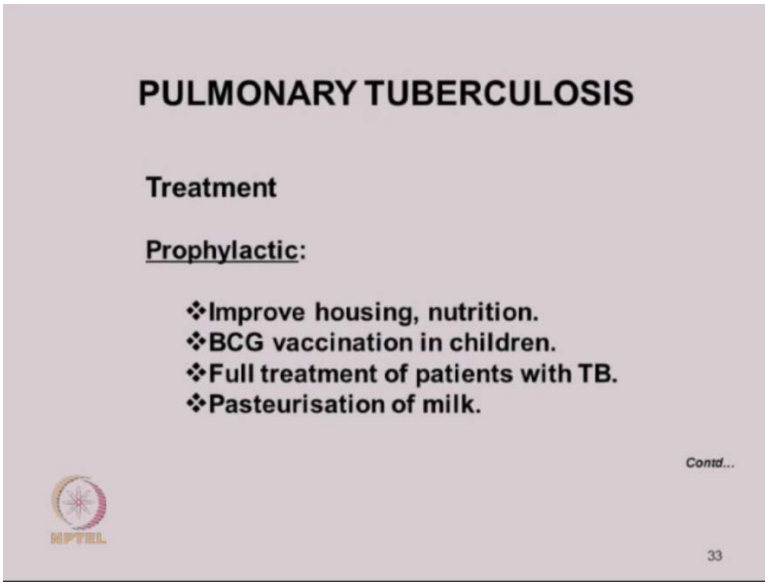

And treatment: Prophylactic is improved housing, nutrition, BCG vaccination in children. And this improved housing and nutrition is important because in the industrializing Lancashire in Europe during the first wave of industrialization, when it came, I mention the kind of conditions which prevailed there. And tuberculosis is extremely common where those goods Americans came forward to have a control program. They were not medical people, tubercles organism had not been discovered, but they changed they reduce the insurance of tuberculosis by attending to this housing and nutrition.

They knew nothing about organism or infection or anything, but they knew that conditions were very bad and what the doctors writing prescription was useless, ineffective and all they tried to do was clean air, clean housing, nutrition; these where the easy to do, achievable, and they succeeded, and this is the reason they succeeded and BCG vaccination in children, not effective in adults, and full treatment of patients with tuberculosis so that they do not become a source for so many other people. And

pasteurization of milk for bovine tuberculosis; these are the prophylactic measures recommended.

And curative therapies: Chemotherapy which dramatically changed the picture but this curative therapy, we must remember it is only effective in individuals or groups of individuals. When you deal with millions of people, you have to have a different approach. This is what I said in the beginning because when we make a claim that because of antibiotics and medical treatment tuberculosis is all disappeared which is simply untrue, because we have statistics to show that in Newyork state, like so many other states, in the Europe also, from 1880, 1890, that is end of 19th century And if you take 1920, early part of the 20th century, already the incidents keeps on coming down; sharp decline.

In fact, there is a very interesting book called medical mimesis written by a man called Ivan Illich, a very highly provocative writer, sociologist; that book claim some 20, 30 years ago I created a certain amount of international (()), because it was very well documented. Now, if you read that, there he explodes this medical myth, doctors taking credit for controlling tuberculosis; drug industry taking credit for controlling tuberculosis; he explodes that myth. There all these figures are you can see that how the tuberculosis incidents coming down year after year, towards end of the 19 century the trend begins and by 1920's very sharp; so, even there was no antibiotic at that time at all.

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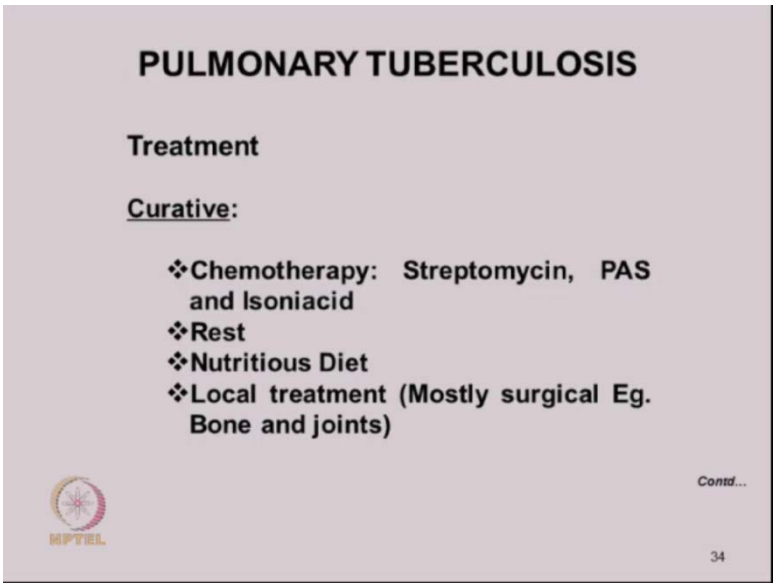

And what was happening was this. The first point improve housing, nutrition; so if that, with that it could have come down on its own. So, when you look at the community epidemiologic terms, that control comes from social measures, socio economic measures, but when it comes to individuals a man with cavitary tuberculosis, you cannot send him to a sociologist. So, if it is an individual or a group of individuals, a few 100s of patients coming to hospitals, those are all individuals. We are not talking about say 50 million people in a state; that is very different. So, the treatment at the individual level and the community level, they are based on different principles all together. So, this is a point which we should remember because I have heard medical students also believe, they sincerely believe once antibiotic came, Tuberculosis was controlled, which is not true.

And chemotherapy, Streptomycin, PAS and Isoniacid there are others now, but these are the, the main state; rest, nutritious diet and local treatment must be separate. That suppose somebody has bone tuberculosis or joint arthritis, tuberculosis arthritis, that has to be treated by specialist. Suppose there is a laryngeal problem which is very severe, some ENT person who will have to treat. So, they have to go to specialist to do this. If it is a ileocecal tuberculosis, the surgeon has to come; so that depends on the specialty. So, that is how the tuberculosis is managed today.

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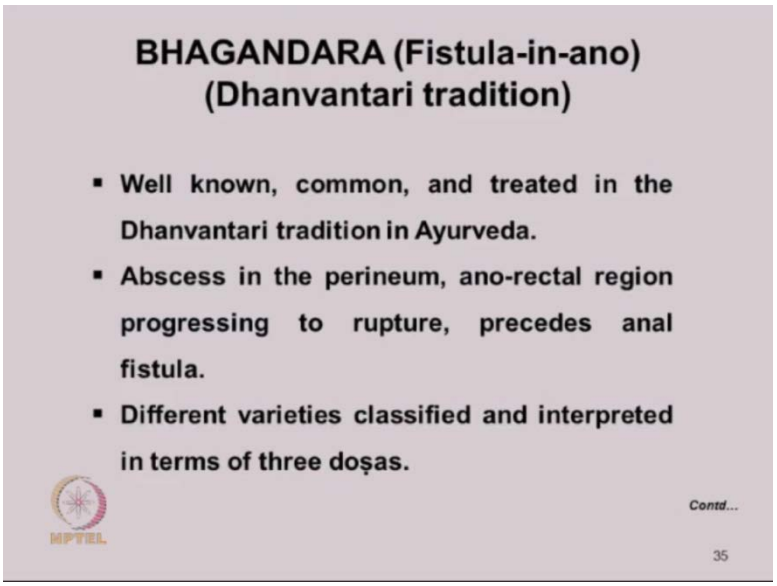

And that now, we go on to the surgical condition. Again to take an example, fistula in and it is a common condition today; it was common in past also and lot of importance is

given in Ayurveda also to treatment of Bhagandara. Incidentally, historically, we talked about Jeevaka several times. Bimbisara who was the king in Pataliputra, he was the father of Ajathasatru, you may remember a painting I showed here; Ajathasatru was the son of Bimbisara and Bimbisara was a great King; a contemporary of Buddha; the disciple of Buddha. And Bimbisara had fistula in anal. In fact, the Jataka tales, they say that when the King had fistula in anal, he was so embarrassed. He would go around and sometimes his clothes would be stained, and people would make fun saying his majesty is having periods.

All these are described. He used to feel greatly embarrassed and it was Jeevaka who operated on him and cured him. So, you can this is a long Buddha's time. From then onwards surgical management of fistula was known. Now, here the concession in the old tradition, there is abscess in the perineum in ano rectal region, progressing to rupture, precedes anal fistula; these are all described; different varieties are classified, interpreted in terms of three doshas.

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And treatment consisted of lubricant therapy like standard fomentation. Those two are in all these has given. And that is followed by Ksarasutra is one of the, which is still being used by Ayurvedic physicians. And surgery was also recommended. They use Proctoscopy. I will show you the pictures in surgical instruments of Susrutha. They could visualize, they could visualize the internal opening if there is any. And the track they

could follow using probes; all these instruments Susruta had designed. And once the, this is visualized, then the tracks would be laid open, sometimes excised, and these could be done in stages; multiple operations. These are all described in a Susruta Samhita. And incidentally, the Ksharasutra, it is not mentioned in the surgical treatment of fistula if you read, that is ksharasutra is not mentioned. It is mentioned somewhere else; so, that was not the main stay of treatment. Main stay of treatment was surgical.

What I have said here, like Proctoscope, visualization and tracening drag using a probe (()). There is a particular instrument which is used to probe the course of this. And then, either excision if possible or it would be laying open the track; that is the main surgical treatment. But in another place, he talk talks about the Ksarasutra is also there; another or lesser alternative. And post operative treatment also is described. Local fomentation, application of medicated ointments and so on. This is the basis of the basic approach to surgical treatment in dhanvantari tradition of India.

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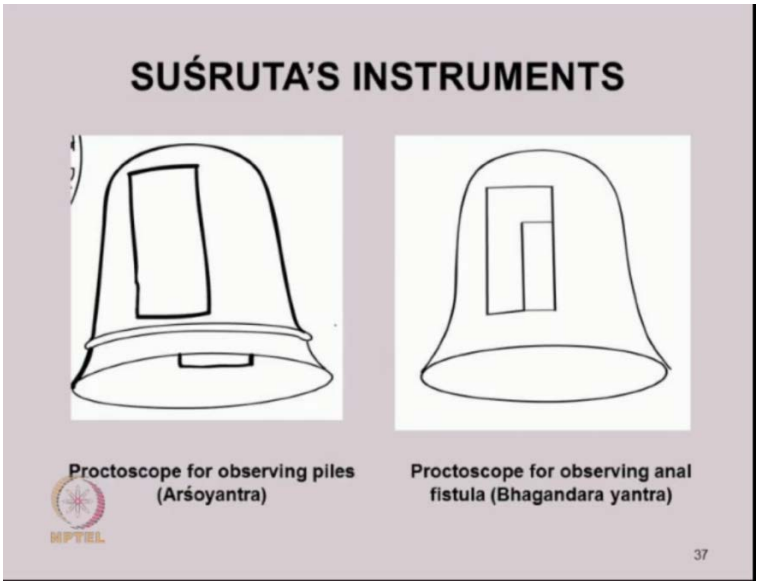

Now, these are the instruments. They are actually very similar. In that the proctoscope being used for on the left hand side the Arsoyantra. Now, that has got a little larger openings because you have to do manipulations there; If you have if you large piles, you have to pull it down; you have to apply the ksara, then you have to turn it and wait for so many matras. Then you have to turn it around to see to what extent it has worked? If it is not fully worked, you have to apply it again. So, you need a little more space to the do

these maneuvers; otherwise, they are basically similar instruments. And this was one of the, the blunt instruments; there are 100 blunt instruments of Susruta; we will be talking about it later on, but these are the instruments, some of those instruments he used.

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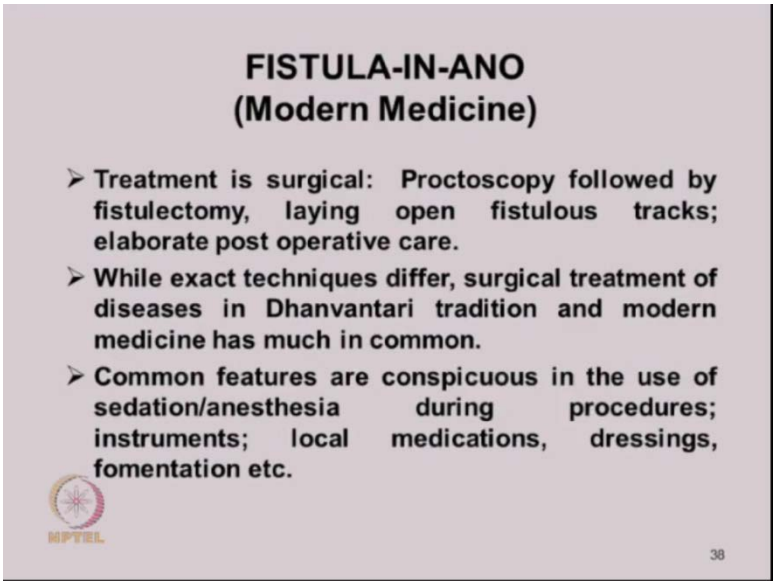

And in modern medicine, the treatment is surgical; there is Proctoscopy like in Ayurveda Fistulectomy is done, laying open fistulous tracks, elaborate post-operative care, almost identical. While the exact techniques differ, instruments that we used or the proctoscope that we used, all these will be different, but essentially they are safe.

Surgical treatment of diseases in dhanvantari tradition and modern medicine, they have much in common. And common features are conspicuous, for example, in the use of sedation. Nowadays, we can use anesthesia, but in Susruta's time, there was no anesthesia; their only sedation was giving wine and physical control. In fact, in these all surgical descriptions, they will say there has to be strong attendants to hold him; otherwise, you cannot do the operation. So, wine alone will not do; that will sort of down the pain sensation, does not take it away. So, you have to have strong attendants to hold him.

Now, anesthesia is used; that is one difference. Proctoscopes today, they are much better; much less chromatic. So, but again, it is an instrument to visualize it; the purpose is the same. And the procedure's exact details will differ, but in terms of fistulectomy, laying open the tracks, essentially we are doing the same thing today and dressings,

fomentation, again similar to postal operative care which was practiced 2000 years ago. So, you will find a great deal of commonality in the surgical approach which unfortunately in Ayurveda, it came to a full stop because by fourth century almost, certainly by the time of Vagbhata, surgery had already disappeared from the main stream of Ayurveda because these were not done by Ayurvedic physicians. If at all a surgery had to be done, it will be sent to somebody else who belong to a lower cast. He was branded the lower cast.

I will be talking about, it is a very important subject; how and why it is happened? Nobody really knows like bone setters. This is big chapter in Susrutha Samhitha. One of the finest chapters, but Ayurvedic vyadhays, they will not touch. They are all sent to bone setters; that is a different class. So, you have a peculiar situation plastic surgery for the nose, for which India is given credit all over the world, Indian technique; no Ayurvedic physician would do it. It is always done by the lower class people. In Maharashtra, where the British people actually saw and recorded, it is always done by kumhar cast; this is the people who make pots; there not doing this. Illiterate people, father teaches the son. In Coimbatore district, there is a couching of cataract which susrutha has described. Now, this couching of cataract in somewhere in end of the 19th century near Coimbatore, there is an observer who has seen this being done.

There is an accurate description, and when you read that couching for cataract, really there was no cataract operation or anything. I mean the way kind of we do it now, but what was done at that time was to take a needle and after all the lens is opaque, and they knew if that opaque lens is out of the way, the man could see it; this was known. That is how Susrutha describes couch. All it means is with this needle with a skillful manipulation, he could displace the opaque lens; it is moved away from the field of vision from the people. Now, this is the couching of cataract which was done in near Coimbatore; I forget the name of the exact place; it is a small village. And there it is written, it is always done by Mohammedans and another a caste which I am not familiar with. And it is described this is the eye witness. He says man came and his needle was taken; it is put; this is done in a matter of minutes; very skillful, because he is doing it all the time. But it is only done by this people; no Ayurvedic physician will do it.

So, therefore, somewhere along that early part of the century, we had this great damage was done to India and P. C. Ray is, I will be talking about it later, P. C. Ray perhaps the

founder of modern chemistry in India, who wrote the history of Indian chemistry, a very great; he is considered an Acharya. And in P. C Ray's book, he has mentioned all these. And this question of people being denied education, they are denied any kind of social advancement; he has no way of growing up; he will always remain doing this; no education and he can only do this. So, from father to son, they have acquired a lot of skill, but unfortunately the couching, the conditions under which it was being done, infection rate was very high. So, immediate result, he can see immediately; it is a dramatic; everybody knows oh he has seen; he can see it; it is a dramatic thing. Man who was blind, suddenly he can see, but unfortunately the infection rate was very high.

So, that, when you read that P. C Ray's description, you can see how much damage we have done to ourselves. And he writes the Soil of India, for example, the Susrutha's times dissection was discouraged; surgical dissection of cadavers. They had to do all kinds of taking of layer by layer, very crude type of surgery which destroyed our anatomy. We could not progress that is because of the taboos Manu would never have; you should not touch their body. So, we introduced all these customs, rules, and denied ourselves any kind of progress, and denied a chance for all these talented people.

Like making steel, Indians making steel in Jabalpur, the same thing; making of furnace, making a refinery, extremely fine work, but if you ask them why you are doing it like this, that I do not know; my father taught me. So, this, all through the entire gamete of socio economic life, we made this huge mistake. So, that is a little digression, but I think it is important that we realize that. Thank you.