Manage TB
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Lecture – 19
Radiology in diagnosis of Tuberculosis
Session 04

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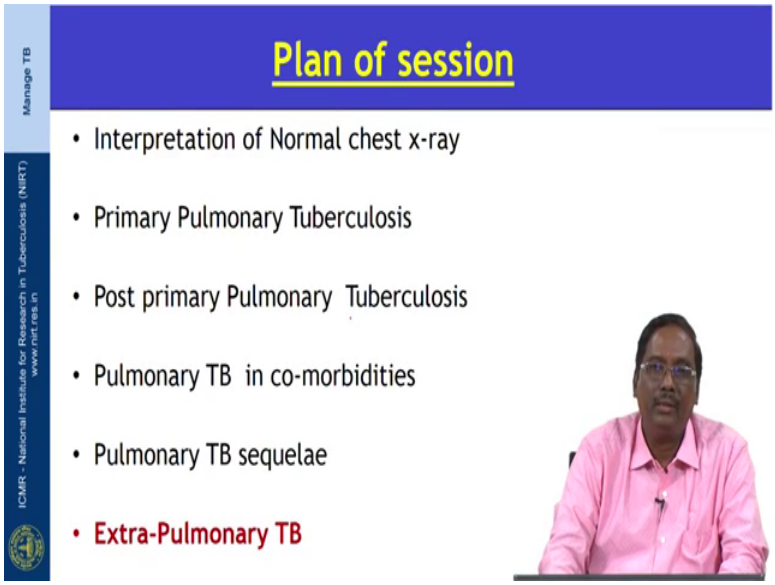

Welcome to the next session; the Radiology in the diagnosis of Tuberculosis. Today we have session in the radiology of tuberculosis; we are going to discuss about the radiologicalfeatures of a extra-pulmonary TB. Extra-pulmonary TB refers to TB involving other than lung parenchyma. So, extra-pulmonary means always it is a spread from haematogenous or there may be a direct extension from a primary TB.

So, extra-pulmonary TB can present either as a primary TB or it can present both primary pulmonary TB and extra-pulmonary. So, it accounts for 15 to 20 percent of the pulmonary tuberculosis cases. Diagnosis of extra-pulmonary is often very difficult, but high index of clinical suspicion with typical or a typical ideological features we can able to diagnose extra-pulmonary TB.

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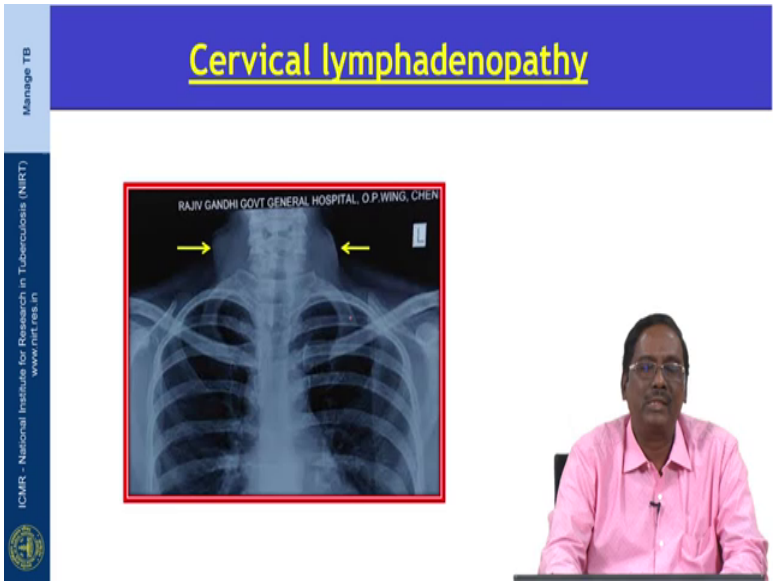

The first commonest extra pulmonary TB is a peripheral lymphadenopathy; it is the most commonest form it accounts for 20 to 40 percent of the extra-pulmonary TB; it is known as a kings evil. This is more common in children and female and also seen in a HIV seropositive patients in a low CD 4 count. So, here there is a soft tissue swelling on either side of the neck; X-ray can identify cervical lymphadenopathy.

However ultrasonogram unable to make size of the node, multiple nodes, number of nodes either matting a presence of a presence of any caseous necrosis and also helps to make a diagnostic purpose.

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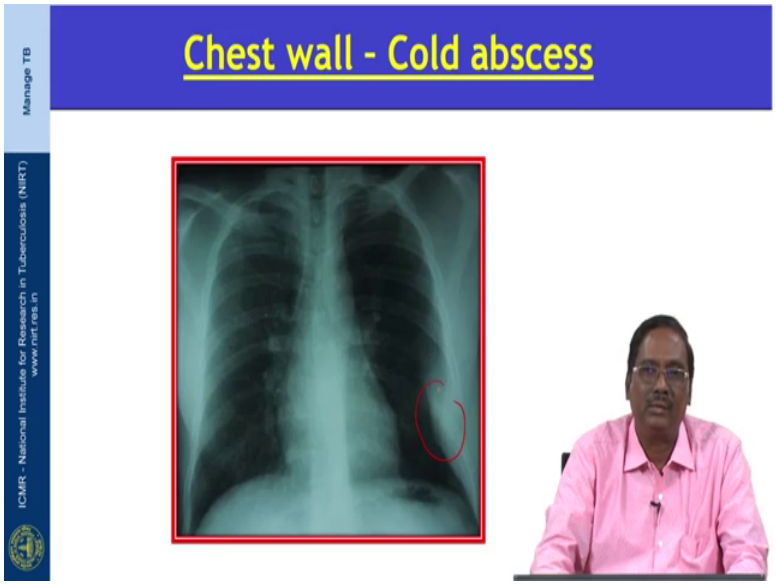

This is chest wall or cold abscess it is characterized by destruction of the bone; bone with formation of the subcutaneous mass and it is a radial it is infection of the rib by tuberculosis MTB complex. So, it is either occurred by direct extension from here fluro parenchymal disease or hematogenous spread from a distance side.

So, ideologically it present as a peripheral mass in a coastal area having a d shape of opacity or a incomplete border sign. So, when you have this type of opacity either it could be a loculated effusion or a chest wall abscess.

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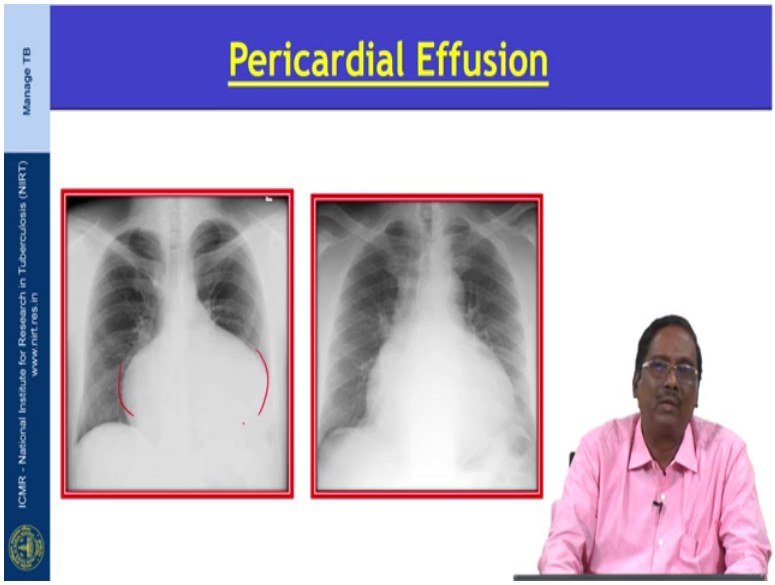

This X-ray showing pericardial effusion pericardial effusion estimated to occur 1 to 8 percent of patients with the pulmonary TB; whereas TB as the major cause for all pericardial effusion majority and it accounts for 80 percent of the cases.

And this is this pericardial effusion is commonly seen in third to fifth decade of life, pericarditis precordium is involved directly from the parent pulmonary tuberculosis or from extension from the node. Ideologically pericardial effusion appear as a globular enlargement of the heart, giving the size of the water bottle configuration. So, with the adequate with the ATT with steroid it this is all completely there are four stages of pericardial involvement; pericardial effusion is the third stage.

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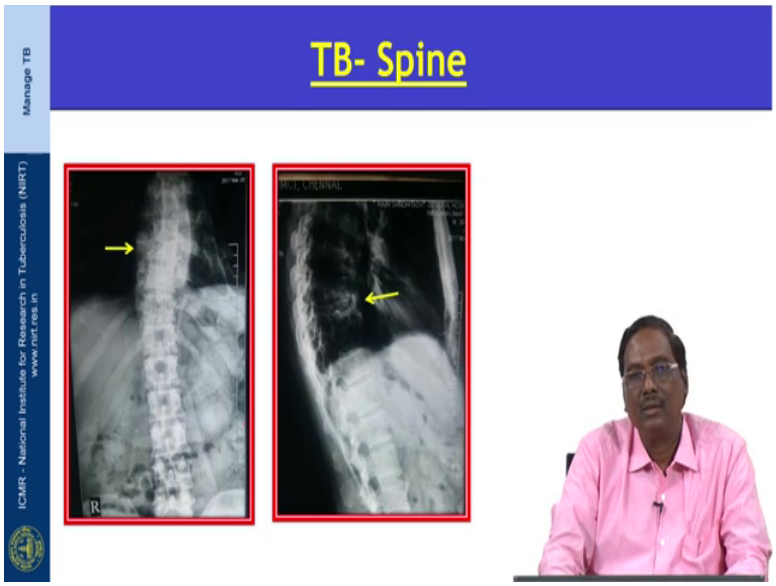

So, 20 percent of the cases they go for a constrictive pericarditis. This is tuberculosis involving the spine skeletal involvement.

Occur in 1 to 3 percent of the patients with tuberculosis; spine is the most commonest site of osseous involvement. It accounts for 50 percent of the all skeletal tuberculoses. So, most common site is l 1. Sometimes two contiguous bones are involved a disease process often begins in the anterior part of the vertebral body and adjacent n plate leading to the collapse of the vertebral body resulting in tuberculose kyphosis.

Ideologically TB spine and diagnosed with a loss of distinction of the n plate and there is a destruction of the vertebral body and there is a anterior this is more seen in the anterior

and there is a loss of a disc 8. So, this is a lateral X-ray showing reduced to height of the vertebral body. MRI is more sensitive and specific for diagnosis of spiral TB it provides yearly deduction.

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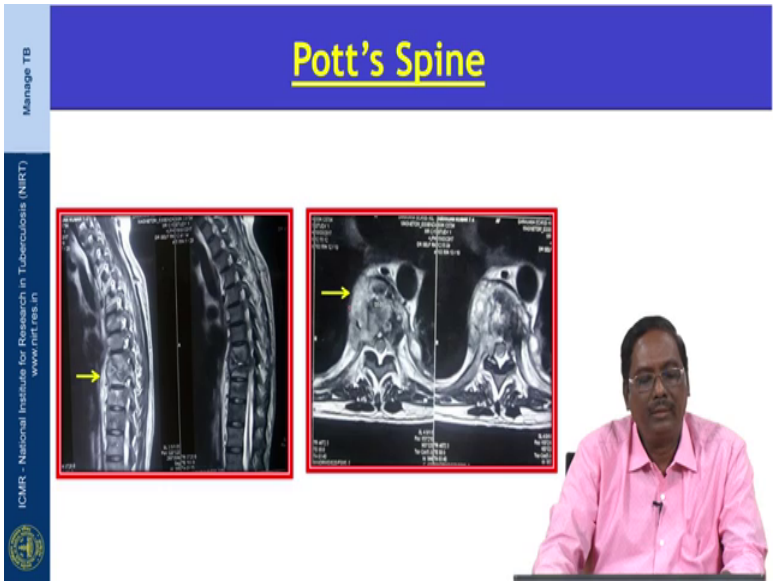

So, this is a MRI showing t 2 weighted image. It shows there is a epidural abscess, so there is the destruction of the vertebra and disc size is also reduced. Here its X-ray showing destruction is the coronal axial view showing destruction of the vertebrate.

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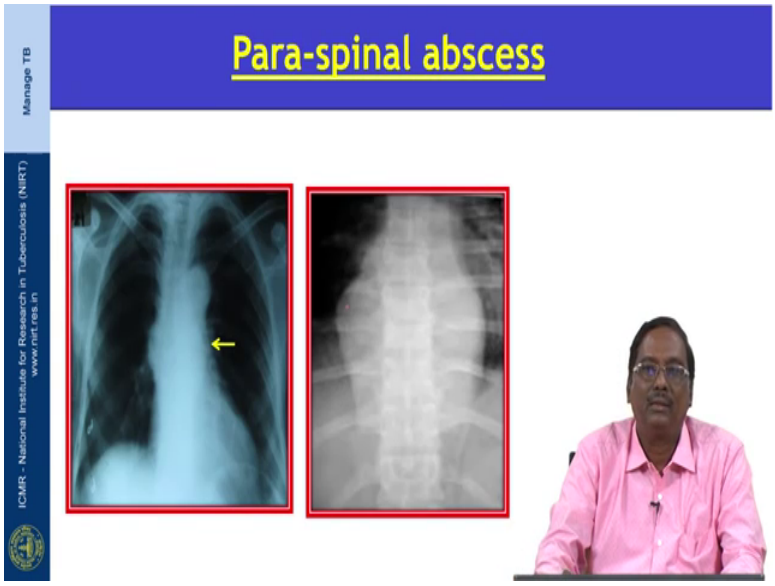

This is the paraspinal abscess due to TB spondylitis. So, if it is seen as a fusiform swelling on either side of the spine. So, presence of calcification is more in favor of a paraspinal abscess due to tuberculosis.

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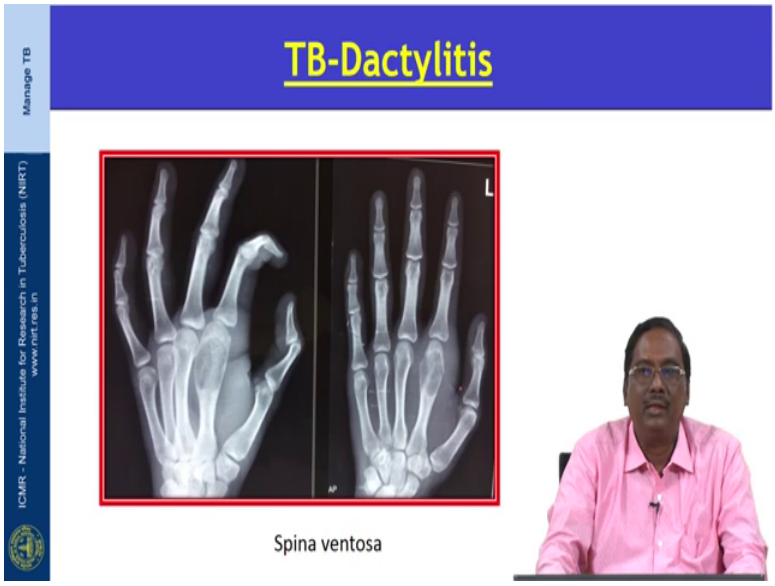

This is a X-ray showing TB dactylitis. What is TB dactylitis? TB dactylitis is tuberculosis involvement of the short tubular bone of hand and feet.

There is more common in children. So, there is a fusiform soft tissue swelling and periostitis these are the two or more important findings as the underlying bone is destroyed. A SIS like cavity is formed and the remaining bone appear to be balloon doubt; this appearance is termed as spina ventosa. So, this is a globular soft tissue swelling with destruction of the periosteum.

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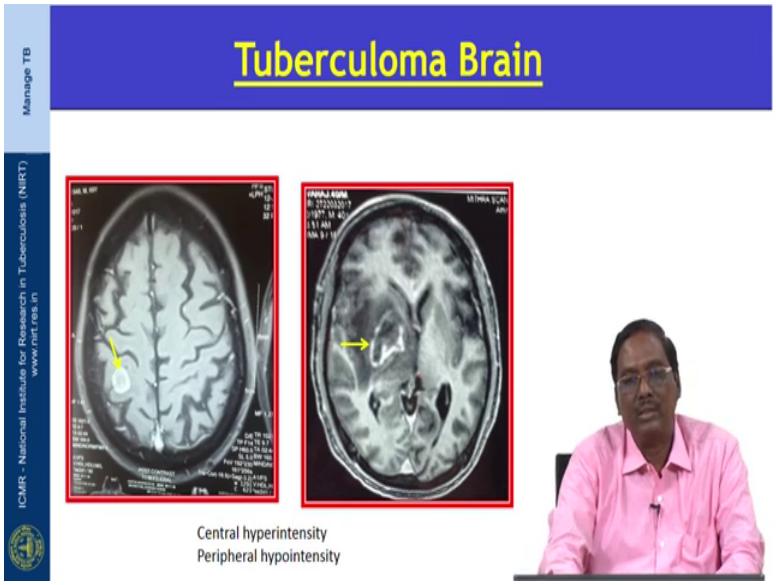

Next tuberculose involvement of the brain; so central nervous system tuberclosis may take variety of form; they have meningitis, tuberculoma, abscess and miliary TB. This is a tuberculoma of the brain so it is usually due to haematogenous spread from the systemic disease or extension of CSF fluid into the adjacent parenchyma. Tuberculoma may be single or multiple; so usually seen in the frontal lobe or parietal lobe. So, MRI is the very sensitive disc for diagnosing tuberculoma, it shows a solid enhancing relation it is called the central hyperintensity and peripheral hyperintensity. It is the hallmark of the tuberculoma of the brain. So, here there is a peripheral hypointensity and a central hypointensity.

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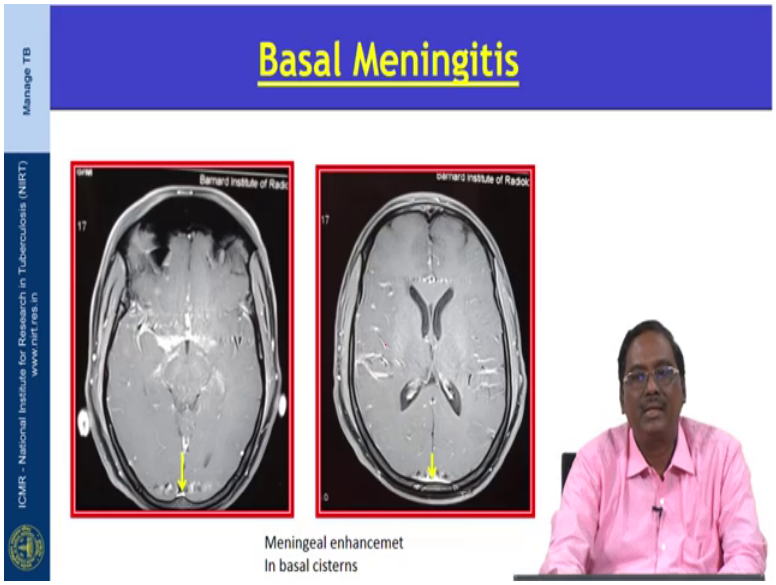

This is the basal meningitis, it is believed to be caused by rupture of the, which focus into cerebrospinal fluid. So, MRI shows there is a abnormal meningeal enhancement. It is typically involve basal cisterns the enhancements correspond to gelatinous exudate. So, here there is a abnormal enhancement in the basal cistern.

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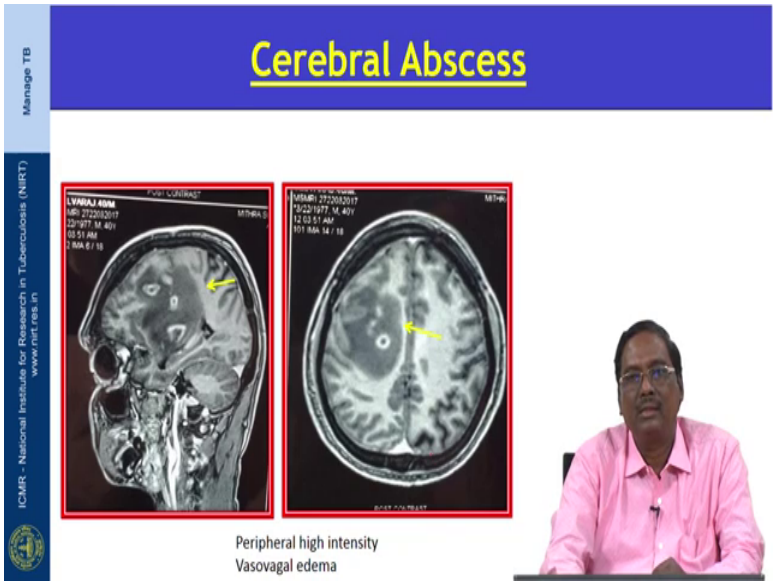

This is a cerebral abscess. So, cerebral abscess is a rare form of a CNS tuberculosis. So, usually it involves a frontal lobe. So, the it consists of a central tuberculoma surrounded by a abandon vasogenic edema; this is a classical of a abandon vasogenic edema is

usually seen in a immunocompromised individual and children. This is a central mass surrounded by a vasovagal edema.

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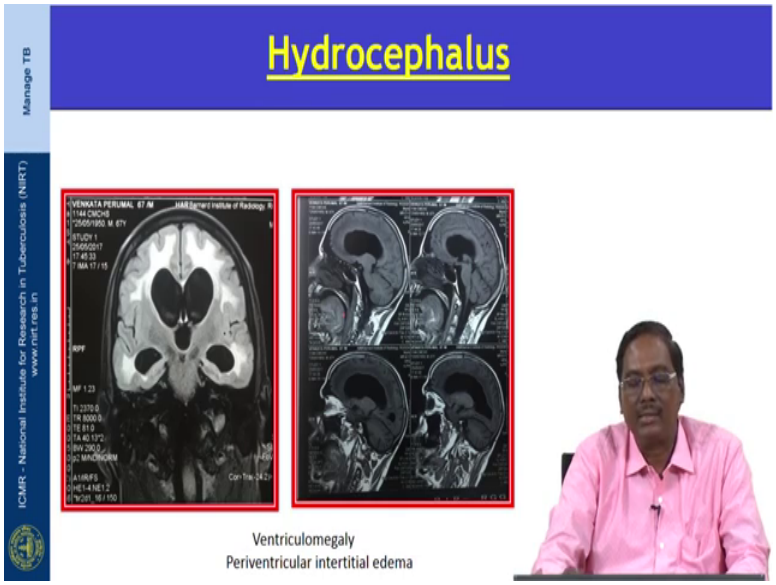

Next is a hydrocephalus it is a most common complication of tuberculous meningitis occurring in 85 percent of the children with the disease. It is more severe in children than adult there are two types of hydrocephalus one is a communicating hydrocephalus or obstructive hydrocephalus; so here this MRI showing the ventriculomegaly and periventricular interstitial edema.

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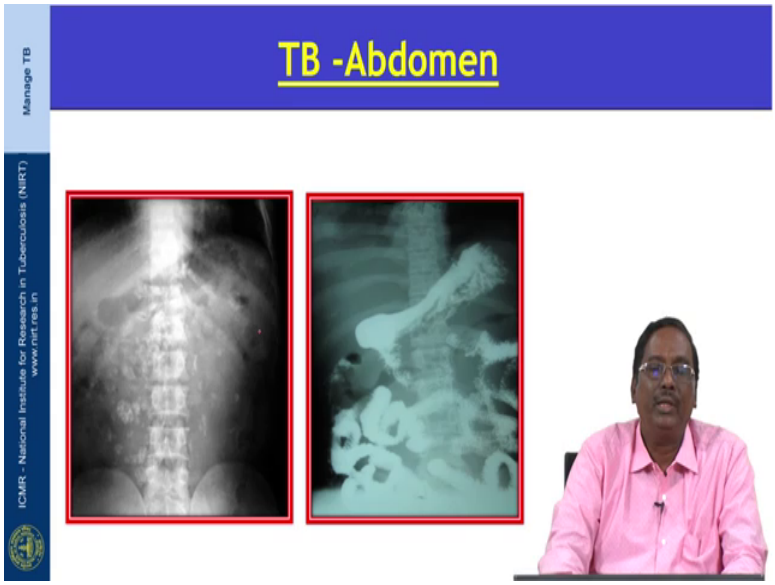

Now, it is coming to the radiological features of a TB abdomen the commonest involvement is a ileocecal junction. It is in 80 to 90 of the percent of patient with the abdominal tuberculosis, the reason being released in abundance lymphoid tissue in the ileocecal junction. So, here it there is a multiple calcifications of the mesenteric nodes. So, here the barium we will study. So, if thickening of the ileum dilalation and clumping of a bubble lobe it is a feature of a TB abdomen.

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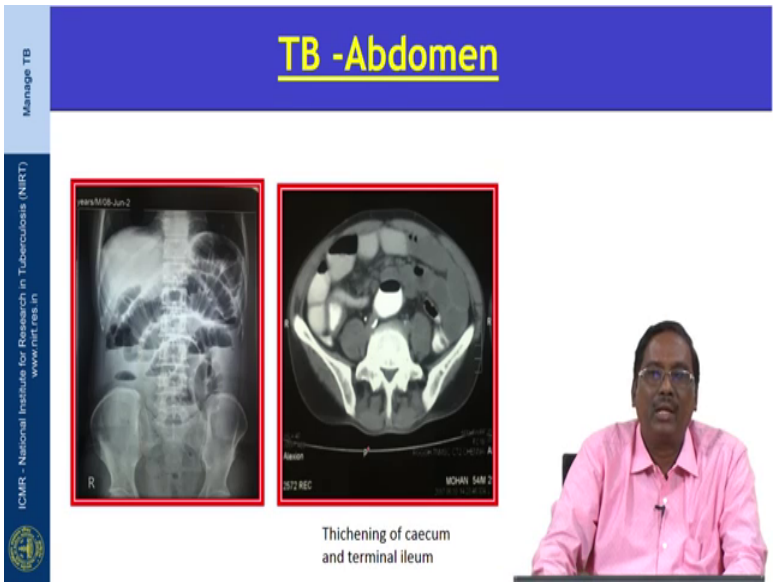

So, this X-ray of plain X-ray abdomen showing multiple fluid levels, it is a dilated bubble with a multiple fluid levels. So, this is a CT abdomen showing thickening of the caecum under terminal ileum.

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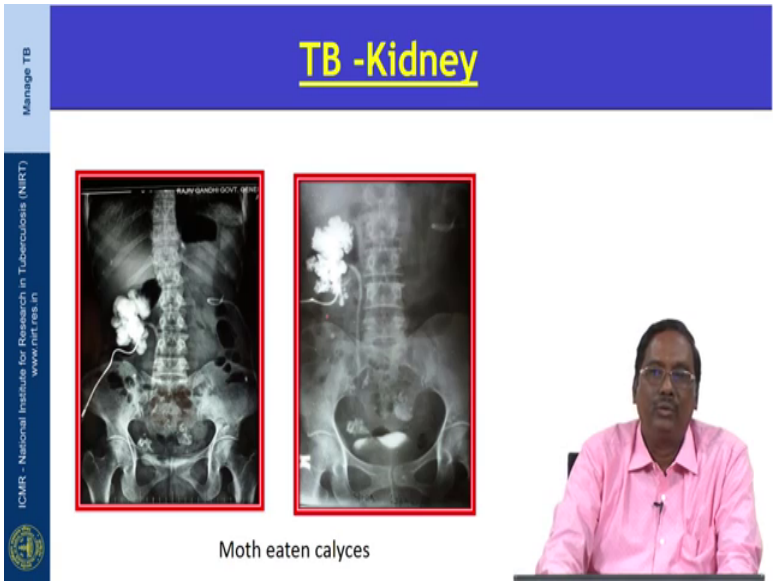

Coming to genitourinary tuberculosis; so genitourinary tuberculosis is uncommon in children because it presents 5 to 25 years after the primary infection it comprises 3 to 5 percent of all TB cases.

So, after lymphadenopathy it is the most common form of extra pulmonary TB. The earliest abnormality is a moth eaten appearance of the calyces. So, this is the intravenous pyelogram showing irregular moth eaten calyces. This is the earliest finding in a TB kidney it is due to necrosis and erosion of the calyces.

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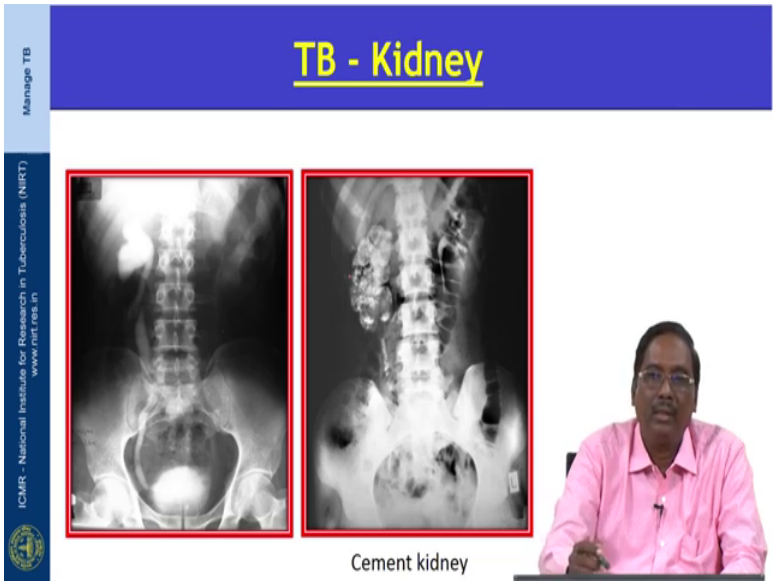

So, it is also a moth eaten calyces. So, here TB involving the kidney the plane abdomen of radiograph showing reniform shaped calcification with lobulation representing calcified calyces tissue. It is known as a cement kidney it is usually sequel of a TB kidney.

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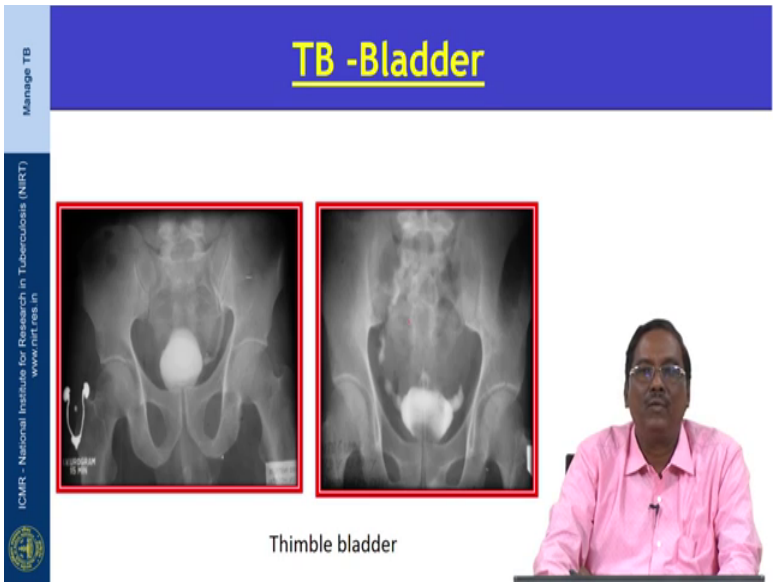

Next is tuberculosis involving the bladder; so tuberculosis usually involve the wall of the bladder it causes calcification involve and also there is a contraction of the bladder wall a capacity of the bladder is reduced.

So, we call it as a thimble bladder; this is a pathognomonic of a TB bladder in a tuberculosis.

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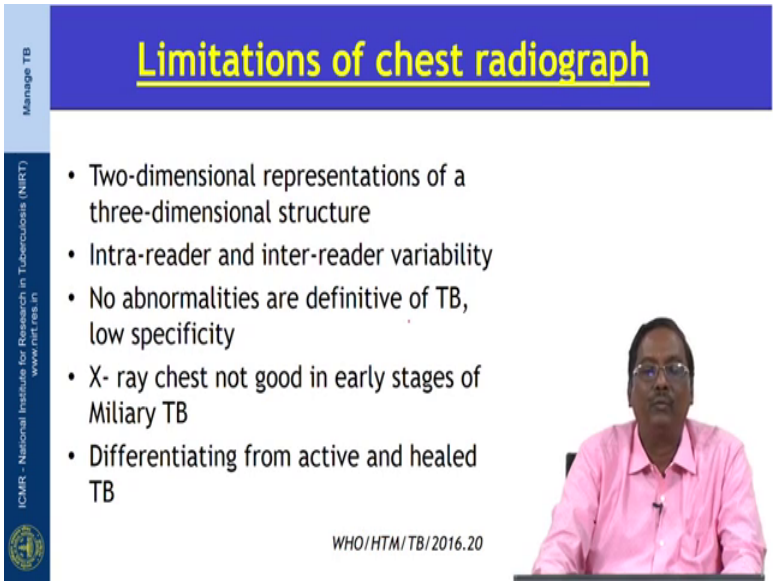

Coming to what are the limitations of the chest X-ray; chest X-ray is a 2 dimensional representation of a 3 dimensional structure. There is a intra-reader and inter-reader variability. So, there may be due to over reading or under reading, but no abnormalities are a definite of TB because the opacity may be shared by even other infection process also.

So, it has a low sensitivity; X-ray chest is not good in early stages of miliary TB because the nodules miliary nodules are missed in a X-ray. So, in there is a 15 percent of the miliary TB X-ray may be normal and differentiating active from healed TB based on X-ray is very very difficult.

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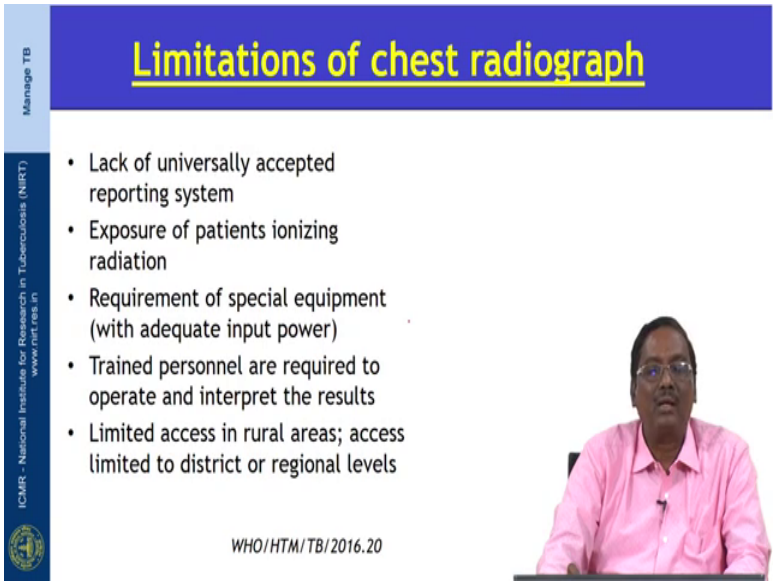

And there is lack of universally accepted reporting system and the there is a exposure of the patients to ionizing radiation and reading of the this is a requirement of special equipment for taking X-ray and trained personnel are required to operate and interpret the research.

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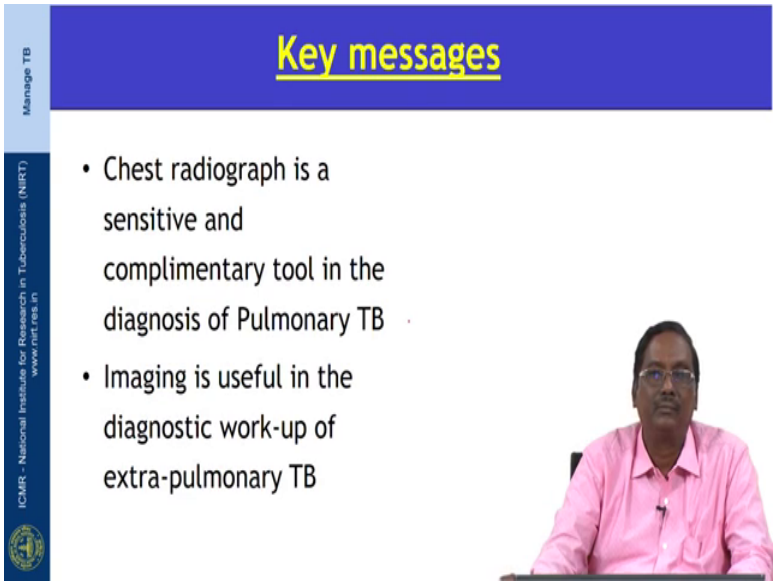

So, the X-ray there is a limited access in the rural area. So, access is limited to district or regional levels. Key message is chest radiography is a sensitive and a complementary tool in diagnosis of pulmonary TB. Imaging is useful in the diagnostic workup of extra-

pulmonary TB. Thank you with this we end the session on radiology in the diagnosis of TB.

Thank you.