Good morning everyone.
Thank you sir for giving me this opportunity to speak on pulmonary infections in cancers
oncology perspective.
So as you all know that new drugs are coming up in oncology and obviously the different
drugs that we are using are having some pulmonary toxicities, they have infections and infections
is a common thing that happens when you are given chemotherapy or any other target regions
also.
So, respiratory system is a common site for complication due to cancer and the cancer
therapy and the cell factors are associated or leading to pulmonary complications.
Because of the immunosuppression, because of the chemotherapy, these patients are pretty
disposed to pulmonary infections, there is a lot of capillary bed network in the pulmonary
system and because of which it is a common site of metastasis and absolutely because
of the different drugs causing injury to the pulmonary capillaries, we need two different
changes in the pulmonary milieu causing infections.
So, newly diagnosed patients with cancers, what we need to understand is all those what
of the treatment would have the same susceptibility to the infection or in the same organisms
will be involved when these patients are of the treatment or in between the treatment.
So, there are different diseases and event defects and by which we can understand what
they are pretty disposed to.
For example, if there is a B-cert effect which is an impaired immunolimmunity, for example
leukemia and multiple myeloma, they will be pretty disposed to the infections that have shown.
If there is a T-cell defect which is common in a Hodgkin disease or those patients are
on hydrosteroids, there will be a more disposed to PCP pneumonia, critical infections, herpes
viral infections and if there is a gramocytic defect like in a myeloproliferous disorders
or those patients were in chemotherapy, there will be more predisposed to the infection
like the GNV, Staph aureus, so and so forth.
So, that will help us to define what treatment has to be given if they have a pulmonary infections
and they are having this kind of malignancies.
Now, coming to the lung infections after cancer chemotherapy, so pneumonia is the most secret
complication that we face and 60 percent of the patients who have a granular cytopenia
during the treatment will develop some lung infiltrates and this will be very confusing
whether it is drug abuse, whether it is infection or what exactly it is.
So, those patients who have developed a severe infections as compared to a minor infections
would have some amount of phagocytic decrease phagocytic activity or they would have a

more oxidative burst and because of which they are more susceptible to infections and
more modularity as compared to those patients who have minor infections.
The neutrophils are pre-activated and they have impaired functions especially before
receiving the chemotherapy and lot of patients with cancer will have a lesser chemotactic
activity, more antibody dependent, semi-degetis cytotoxicity and cytostatic activity will
be compromised and so whenever they are giving chemotherapy that is the reason why they are
more predisposed to infections.
Now, these are the different infections which are associated with chemotherapy, the bacterial,
the viral and the fungal.
Now, lot of patients who are receiving chemotherapy will have a not a single infection but a polymicrobial
infection because of which we always prefer to use a combination of the antibiotics and
so generally they are a combination of gram positive bacteria or gram negative bacteria
or a fungal infection less commonly viral infections.
So, for example, those patients who had a cytomegular virus infections would have concomitant PCP pneumonia also along with that or those who had a previous cytomegular
virus infections I have recovered will have if they develop lung inferences be aware that
this can give PCP pneumonia also.
So, these are some special situations.
Now, leading I mean there are certain comorbid situations the patient would be having when
they are receiving chemothermic.
For example, those patients who are having COPD and now they will be more predisposed
to colonization with SMEMO and H-M-FRIZ infections and this patient will have a impaired mucosily
clearance which lead to the gram positive and gram negative bacteria infections.
Those who have diabetes, malitis infections would be more predisposed to a lower respiratory
infection because they have a immunocompromised activity and they would have more susceptibility
to the gram negative acidity tuberculosis type of these infections.
So, these are specific situations and based on that we can define you know what kind of
infection this patient can be predisposed to.
Also those patients who have a heart failure or a serotic liver cirrhosis would have more
a predisposed to staph pneumonia infections.
Those who have a sphenia they will be more predisposed to encapsulated organism infections
and these infections would be more polymicrobial.
Those patients who have a aspiration pneumonia they would have a defective serially functions
and so they will be having mixed aerobic and enderobic infections.
Now coming to the causes of lung infillates.
Now lung infillates could be because of the drugs.
So you know these are the drug interceuminitis like you know this all drugs and cause lung
infillates or it could be because of the underlying disease which is progressing it

is because
of the boop because of the say for example, immunotherapy it can be because of the congested
cardiac failure it can be because of the radiation.
So this all causes can lead to different lung infillates.
Now coming to this special situation like for example, non-etropic phase.
Now non-etropic phase will be predisposed to this kind of infections which have enumerated
and those patients who have as I said defective immunity would have infections because of
staph aureus gramnically bacilli infection, etchymthrin infections.
Those patients who are using corticosteroid therapy for example, more than one month of
prednisolone and at the dose of more than 20 milligram will be more predisposed to PCP
pneumonia like infections.
Now the treatment for this patients on the non-intervanic phase would be the save on
the lines of those patients who are having not receiving chemotherapy and so this will
be combination of macularids, chlorocarulones and so on and so forth.
Now coming to the neutrophonic phase.
Now this is a bit different because we divide the neutropic phase into three types short
term, mid term and long term and so for example, patients who are in first to 70s of the neutropinia
they would have a different set of organisms.
For example, P.A. regionose or enterbaticic and a staph pneumonia would be the predominant
gram positive organisms.
So combination of the antiparticles would be advisable when you are looking at a patient
who are in the first phase of the neutropinia.
Now if we come to the second recovery neutropinia they would have most of most of the infection
because there is a space of the engines and molds.
For example, the seraceous, ruminous, acyritobacter, cytobacter, and enterobacter.
So what we can do is those patients who are having first become neutropinia you can cover
them up in the first way itself so that if we are suspecting that these patients would
have an intropine the second phase and more produce to support we can avoid a spore and
so the mortality of these patients will come down.
So when we are approaching this patients will have to look at the different symptoms, we
will have to do certain investigations and especially sometimes we may require bronchoscopy
and bowel because just looking at the lung inferences you cannot be sure what we are
looking at.
So different clinical parameters, radical parameters, lab parameters has to be taken
into account by defying the treatment.
So coming to the pulmonary changes and imitropy because now we are using more commonly imitropy
in our practice and lot of times we will have lung inferences.
So if you look at the pulmonary events because of the imitropy if you look at the nivolumab

pembrozumab will have different nodules, we may have different ggos, we may have different
changes in the lung which will be difficult to differentiate between an infection and
drug radius pneumonitis and what are the potential risk factors.
So those patients were arriving a combination of ICIs or they are seeing any TKIs or they
are seeing those who have received previous chemotherapy this will be having a binding
on what kind of pulmonary events these patients would have were seeing ICIs and so this is
still be very important if we are you know if we get a patients who have received we
are receiving ICIs and develop the lung infiltrates.
Now this is a pathophysiology I am not going in much detail but it is a T cell meditate
event because of which we get the drug into pneumonitis in the and this is how the picture
looks in ICI pneumonitis and if you look at the diagnosis the criteria for the diagnosis
we can see that what are the history what is the symptoms or evidence of pneumonitis what
are the previous or resistance antibody patterns that we see and we have to exclude the other
you know etiologists we will have to do the different imaging modalities and sometimes
we may need to do a ball and this is the algorithm for management or suspected drug
you know ICI pneumonitis.
So we need to do the radiological investigations we need to do the ball sometimes and based
on that define what should be the treatment.
Now coming to summarize so oncogen polynomics to work in tandem to define what we are looking
at as we are getting more and more new treatments you know we have to define what kind of this
treatment would have a binding on the permit complications because this is important in
defining whether we need to stop the treatment with the same drug or we need to change the
therapy or we can just go away with the infection.
Sometimes these patients may have ICI related pneumonitis we will be treating with antibodies
and we may lose the patients.
So you know the working so looking at the clinical radiological and the lab and taking
a decision making is a very important in this era where we are using more ICI targeted
therapies.
Thank you.