Discussion to: Comprehensive Sampling of the Lung Microbiome in Early Stage Non Small Cell Lung Cancer

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Discussion to: Comprehensive Sampling of the Lung Microbiome in Early Stage Non Small Cell Lung Cancer

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Dr. Sai Yendamuri (Buffalo, NY):

Thank you for a wonderful presentation. And thank you for sending the manuscript to me well ahead of time. The strength of the work you’ve done is the fairly well-thought-out sampling scheme which you’ve outlined so well and you’re able to find differences even with a relatively small number of patients. But I really like the sampling scheme. I have three questions.

My first question is sort of a methods question. When you take these samples, do you have a negative control with the bronchoscope before you start the process so that you know it’s not coming from environmental contamination? And along with that, do you also have data on how many of these patients were exposed to antibiotics, say over the last six months or a year because there’s data to show that an antibiotic exposure can alter your microbiome for months if not years.

Dr. Rishindra M. Reddy (Ann Arbor, MI):

Great question. We did actually have negative controls. And so the methodology has been outlined by our pulmonary group who has done similar work in noncancer patients. And so with the bronchoscope, we actually take a sample both before and after the whole sampling process to use as a control method afterwards or to have that control. With the brushing samples, the specific brushes we use actually are pulled back into a small kind of cannula. So those are protected also when they come in through the bronchoscope. And then your second question was antibiotic use. It’s a great question. We did not track that. And so we don’t have a good sense of that, but it’s a great point for going forward.

Dr. Yendamuri:

Great. The second question I have is, it’s interesting that you take BAL and brushing. And that concordance or lack thereof itself is an interesting question. What was the level of concordance if you take it from the same side between bronchoalveolar lavage and brushing?

Dr. Reddy:

So they were actually fairly concordant. The one difference was the density of bacterial DNA was much higher in lavage specimens. So we routinely injected about 15 mls, and you don’t get all of that back, but you’d get about 7 to 10 mls back. But the density of the DNA was much higher in the lavage specimens versus the brushings.

Dr. Yendamuri:
Often we wonder if the microbiome is a cause or an effect, and it’s almost impossible to show one way or the other. But if the microbiome in the lobe with the cancer is different from the general microbiome, isn’t it more likely that it’s a result of the presence of the cancer and the alteration of the immune milieu thereby rather than the other way around? What are your thoughts on this?

Dr. Reddy:

I don’t know that you can tell. It’s a great question. I mean, that’s part of the goal, and I think that will require long-term follow up. So one of our goals with this is: Could we institute a longer study with larger numbers and to figure out. I think from our data, we suggested that we don’t need to do both the brushings and the BALs going forward to get that data. So it’s a great question, but I think it will require larger numbers and more follow-up.

Dr. Yendamuri:

Thank you. And thank you for the opportunity to discuss this paper.

Dr. Reddy:

Thank you.

Unidentified Speaker:

Many people with adenocarcinoma we find have GERD. Did you have any correlation between the microbiome in the lungs and the microbiome in the stomach?

Dr. Reddy:

We did not look at the microbiome in the stomach. It’s a great question, something else we could follow up on.

Dr. Harvey I. Pass (New York, NY):

Just an observation. I think this is important and really warms my heart, because at NYU, we have done the bronchiolavage study with patients who have later-stage lung cancer, showed that it’s prognostic. But the key thing is that we found Veillonella. And Veillonella we’ve also found in sterile specimens that we've taken from the operating room in 150 specimens and looked at the lung microbiome in the specimens and the normal tissue close to it. And it turns out that the
signature for prognosis for early-stage lung cancer from the microbiome, which is also Veillonella, is better in the lung than in the tumor. So I think you’re onto something. I think you ought to continue this work. Congratulations.

Dr. Reddy:

Thank you, Dr. Pass.