

SPEAKER 1: So when the thought comes into the clinician's mind, does my patient have NTM disease? The path to finding the answer is pretty clear and pretty consistent with clinical medicine in general. And that is there are three avenues of investigation that must be pursued in any patient where you think about NTM disease. The first one is clinical, so does the patient have a clinical syndrome which is compatible with NTM disease? What I mean by that, the things I've been talking about, cough, sputum production, fatigue, hemoptysis, afternoon fever, these are the clinical symptomatology and they're basic to answering the question, does my patient have NTM disease. Are they required? No, but they're an important element.

The next thing is radiology, so there are certain features of radiology that are compatible with NTM. There are certain features of radiology that are suggestive of NTM and you really need to look for those things. So what am I talking about? I've already mentioned, tree-in-bud, tree-in-bud but is the common thing that people talk about, they talk about it as if it's a specific thing for NTM and it's not. For that matter. None of the radiologic features are specific. Just like none of the clinical features are specific, but they add up, one by one, they add up and that's what the clinician has to do, you have to kind of play this little game. Is there tree-in-bud? Is there bronchiectasis? Is there ground glass abnormality? Are there cavities? Are there nodules? Is there fibrosis? Is there plural disease? So all of these things can be due to NTM. Each of them can be due to a wide variety of other things. The more these findings you find in the patient, the more you have kind of a cheese becomes binding, and the diagnosis becomes more established.

So, first clinical, second radiologic, and third microbiology. Notice, I didn't start with microbiology. because it's not the starting point, not usually, not hopefully, but sometimes it is. Sometimes, the patient is referred to you as a clinician because the AFB smear was looked at and it was positive. So, does that make things easier? Well, somewhat. But at any rate, what you want to do is to look at the microbiology, and looking at the microbiology it's very important to keep in mind that the shedding of microorganisms is not continuous. It tends to be episodic. So you have to get three sputum to start with. That's the standard, is it scientifically necessary? No, but it's certainly standard practice, it's been my practice all of my life, and it's certainly supportive that you get three sputums if you can. And that's an important feature, because while I've emphasized cough and sputum production as important symptoms, not all patients with NTM have cough and sputum production. In fact, maybe 10, 20% even when you ask them to, will not bring up phlegm, will not bring up sputum.

And even if you have a aerosol induced sputum, some patients don't bring up phlegm. So, we'll start with those that do. The ones that do you get three sputum and you send them to the microbiology for confirmation. The ones that don't, you have to become more creative and you have to think about two elements. One is time. So, if the patient doesn't bring up sputum today, doesn't mean they're not going to bring up sputum next week, or the week after. So you can just send them home and try again next month or next week. It depends on how important it is to do the work up immediately. If it's important because of the clinical symptomatology or the radiographic findings, you may want to do a bronchoscopy.

I'm a little reluctant to order a bronchoscopy because A, it's expensive, and B, it's invasive, and C, you don't need it all the time. It's not essential, but sometimes it is, so I'm not afraid to do it. I certainly, think about it carefully, but if it's indicated, by all means it's well worth the trouble and in fact, there are some patients with NTM disease who you can only make the diagnosis with bronchoscopy. For that matter, there are some patients who have a negative bronchoalveolar lavage, that you have to do a lung biopsy. And if that's what it takes, and the clinical symptomatology indicate that, by all means do it, it's a perfectly safe and appropriate procedure in certain circumstances. So I emphasize, there are three prongs to making a diagnosis clinical, radiologic, and microbiologic, and you need to investigate all three of them to their limit.