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Monitoring Control in Asthma: Do Biomarkers Play a Role, and How Can Asthma Management Plans Help?

MONITORING CONTROL IN ASTHMA. DO BIOMARKERS HAVE A ROLE AND HOW DO ASTHMA MANAGEMENT PLAN HELP?

You are listening to ReachMD, The Channel For Medical Professionals. Welcome to hot topics in allergies presented by the American College of Allergy Asthma And Immunology. Your host is Dr. Ketan K. Sheth, Medical Director of Lafayette Allergy and Asthma Clinic in Lafayette, Indiana.

Noninvasive methods are ideal for diagnosing and measuring asthma to determine the most appropriate therapy for a patient. Biomarkers can play a key role in this process. Joining us to discuss monitoring control in asthma. Do biomarkers have a role and how do asthma management plan help. This is Dr. Stanley M. Fineman. Dr. Fineman is Clinical Associate Professor in the Department of Pediatric Emory University School of Medicine and he is currently practicing in Marietta, Georgia.

### DR. KETAN SHETH:

Welcome Dr. Fineman.

### DR. STANLEY FINEMAN:

Thank you,

### DR. KETAN SHETH:

Let start with what a role do biomarkers play in monitoring asthma?

### DR. STANLEY FINEMAN:

Well biomarkers are really at this time they do not play a significant role clinically, but if you read the studies, the investigations in our medical journals, they are all over the medical journal because there are some biomarkers available now that can be used to monitor the inflammation in lungs and with that we can help monitor control on asthma. So, it's not really a practical thing at this time, but I think

down the road it probably will be.

**DR. KETAN SHETH:**

Of the various biomarkers out there, which one do you think will be coming to the forefront soon and, which ones do you think that be a while before we can use?

**DR. STANLEY FINEMAN:**

Well I think that the only ones that really available for our physicians in practice right now is exhaled nitric oxide and exhaled nitric oxide is really a device that you can use to measure how much nitric oxide, which is basically a nitric oxide result from inflammation in the mucosa so you see an elevation in nitric oxide with increased inflammation in the airway and there is a device, a commercial device that you can purchase and measure the exhaled nitric oxide, and in fact, some people are doing it you know when they practices right now. It is very expensive device in the \$50,000 range for the full monitoring device itself, although it looks kind of like a spirometry and you basically blow in it to like a spirometry, but it calculates the patient's exhale nitric oxide and you now measure that each time the patient comes in and see basically how the inflammation is doing based on the exhaled nitric oxide level.

**DR. KETAN SHETH:**

Other one that you think will be available down the road that we should be reading about that are going to be the future in 5 to 10 year?

**DR. STANLEY FINEMAN:**

I think the exhaled nitric oxide will be the future in 5 to 10 years. We also have available nitro choline challenger airway hyperactivity measurements. This is another biomarker of inflammation or airway hyperactivity it's been around for a long time. It's also not a very practical measurement for us to use because it is difficult for the patient we certainly don't like to have the patient's performed the methacholine challenge this is a test where patient comes into the labs, the pulmonary lab, the inhale the methacholine with dosimeter and you measure their lung function after various dosages of the methacholine. In an asthmatic, who has airway hyperactivity, the airway going to spasm and you see a fall in their lung function, fall in their FEV1, where as somebody who doesn't airway hyperactivity he doesn't have a asthma, you don't see this fall. The more methacholine intake to cause the fall of the FEV1, the falling the lung function by 20% mark, then the more stable the airways are. The less methacholine it is needed the more hyperactive the airways are, the less control the asthma is in. Otherwise, its kind of a reversed type of situation, but methacholine challenge is a way that is used in studies and has been used and in fact there are studies out that have reported that if you measure methacholine challenge on a regular basis, lets say every 3 months, patients tend to be in better control, which means they have fewer ER visits, fewer hospitalizations, less use of rescue medication, rescue inhaler, less use of systemic steroids. Now the interesting thing in these studies, if you look at them in detail you will see that one of the characteristics after the usually need one year studies the average dose of the inhaled steroid in the patients who have followed monitoring with methacholine was higher than those who just monitored with this just normal symptomatic measures. So it seems that at least in some of these studies because we are measuring these inflammatory markers, the dosages of the inhaled steroids tend to be little higher in some of these patient's and that could be the reason that they are under better control.

**DR. KETAN SHETH:**

Or it may be that we are really under treating many of our patients because we don't have that insight that the biomarkers are giving us?

**DR. STANLEY FINEMAN:**

It's a good point, we may be under treating I mean we do know even I both see patient's that come in and some patient's are very sensitive to their dyspnea and otherwise they has a very acute sense of their shortness of breath and they may report symptoms the lot sooner than other patients that are less sensitive to dyspnea and they tend to underreport the symptoms and generally if they under report then it may not show up on spirometry. We do know that spirometry is a good measurement of airway obstruction. We do measure that every time you know we monitor our asthmatic patient, but sometimes the lung function may be normal, but there is still may be inflammation in the airways and we see that in studies with exhaled nitric oxides, the sputum eosinophils and things like that they are reported in the medical literature.

**DR. KETAN SHETH:**

What other methods for monitoring asthma control? Are there that might work in conjunction, with all of these biomarkers?

**DR. STANLEY FINEMAN:**

Well one of the things that are doing in our office is the asthma control test, which is basically validated questionnaire. There are several of these available. The simplest one is the asthma control that suites this 5 questions. The patients they come into the office after the nurse works them up, they sit and they do the questionnaire just take them a couple of minutes and we added up. If the score is 19 or less, then it indicates that they are not in control. Of course, everyone knows the new guideline and I know you just had a program about the guidelines and control. The guidelines are really stressing if the patient in control or not in control. So this 5, you know question questionnaire, which is available online if you just goggle asthma control test you will be able to download the questions and we find it very helpful in our practice because it shows patients basically another way we can determine their airway and how we measure asthma control.

**DR. KETAN SHETH:**

Are you doing instead of spirometry in addition, how are you mixing that?

**DR. STANLEY FINEMAN:**

We are doing in addition to spirometry. It is interesting because we occasionally will find that even with normal spirometry, the patient may have a low asthma control test score, and when you start inquiring a little bit more, like how much you are using your beta agonist when you are running or you know you really wake up at night. They are doing it more than you think and it just happen in come in on a good day when the spirometry is good. You know when we see him in the office, we see one moment in time, so I can photograph, whereas the asthma control test score ask the patient how did they do over the last four weeks and makes something that relatively subjective, such as how much time your asthma is kept you from do other things you want do. How many times that you had shortness of breath, or asthma symptoms, or if you used the rescue inhaler? I mean some of these questions we are going to ask the patient. You know we do ask when they come in about how often they use inhaler, but sometimes patient's may not really focus on that and sometimes they minimize their symptoms, and you know we only can get the information from patient as good as we can and sometimes they want to show us that they are in control, so they want us to be pleased and they may overestimate their level of control.

**DR. KETAN SHETH:**

Lets talks a little bit about asthma management plan. Do they help us?

**DR. STANLEY FINEMAN:**

I think they help us a lot. We use asthma management plans on everyone and we given to the patient we keep the record in the chart. We photocopy and put them in chart, because we then can change it you know when the patient's come in, it sort of amazes me sometimes when the patient's comeback after we see at the interval when we see them. You know they may not been using their control medicine twice a day. When we told to use it twice a day, or that they said stopped using this whatever they sometimes get confused with the instruction and though the confusion issue when they write it all down, its helpful for them, but its also helpful for them to look and see. Oh yes, we really did go through this and we do want to use controlling medicine. So I think its a very useful tool for managing our asthmatics and I think the patient's really like that.

**DR. KETAN SHETH:**

What types of things other than the written plan and I know we have talked about the asthma control test, we talked about ENO exhaled nitric oxide as perhaps something in 5 to 10 years, but what are the things are markers of control from a clinician's perspective?

**DR. STANLEY FINEMAN:**

Well from the clinician's perspective in addition or difficulties doing their normal function, not able to participate in sports, you know if the child or lets say an adult who likes to do running or some kind of vigorous activity. Nighttime awakenings, obviously wheezing, or coughing, these are all things that you can ask them. So functional status you know how the patient is functioning is very important in measuring asthma control. So we always ask them that. Daytime symptoms, it think it is good to ask them how many time they have used inhaler in a week, their rescue inhaler in a week because daytime symptoms are important, night symptoms are important. How many times do they wake up at night? I mean this is you know bother them. Did they have to use a rescue today, did they sleep with a rescue inhaler right by their bed because when they wake up they have to use it. So the use of quick release inhalers is a good way to monitor control, as well as something we always ask about. The patient self reporting is obviously important whether or not they missed work or school or whether or not they had come in to office, go to emergency room or have to increase the utilization of health care resource and a course you know one week see him in the office, we usually do a lung function spirometry, because we know we feel that something we need to monitor as well, and it really helps to get the patient seeking about lung function and how important the control is. One of the things I did mention about the asthma management plan, I have noticed that there are some manage care organizations and we certainly see patients with some of the manage care organizations who are requiring patients to have asthma management plan. These health plans are requiring patients to have asthma management plan to document that we are in fact recommending inhaled steroid because unfortunately sometimes patient don't fill all prescription that we give them and may not use controller, because sometime they don't feel it working because it is inhaled steroids and inhaled steroids really you don't feel bronchodilatation with those.

**DR. KETAN SHETH:**

You mentioned rescue inhaler and obviously people noted that albuterol, their medicine that they need for quick relief, should obviously all patient should have them, but should they have an endless supply of rescue inhaler what you recommend?

**DR. STANLEY FINEMAN:**

Well, its very interesting you said that I had a patient today who uses a prescription formulary that wants a 3-month supply. Okay so I gave him 3 of their controller and with a refill so that they could get it for 6 months, but the rescue inhaler I would only give the one with one refill, and they said why don't you give me 3, and I said because I don't want you have 3. I think it is wrong to give patients too many rescue inhalers as they can refill. I gave them 1 inhaler with 1 refill, so if there is problem you know if they lose it they can get the 1 refill, but if they are using more than that, I want them to cal me and want to know that they are over using their short-acting beta agonist.

**DR. KETAN SHETH:**

Now, you are not going to do this on a daily basis, but let's talk about over using. What do you mean by that? They are using one of these rescue inhalers over year, or month, or week. What's your trigger or what kind of numbers do you get concerned about?

**DR. STANLEY FINEMAN:**

I think if you are using about a month that something to be concerned about. You know rescue inhaler they need to refill in month that should trigger you in your office to say there is something wrong here. Some people would say well may be after using rescue inhaler in 2 months you should be concerned about that as well. So clearly, I think if you are having a patient that is calling you for refill on the rescue inhaler and they are using more than 1m and they need another rescue inhaler every 1 to 2 month, I think that is a red flag for us as clinicians that we need to have him come back to the office and certainly see what is going on.

**DR. KETAN SHETH:**

I would like to thank my guest from Emory University School of Medicine and Dr. Stanley M. Fineman. Dr. Fineman, thank you very much for being our guest this week on Hot Topics in Allergy.

**DR. STANLEY FINEMAN:**

Thank you.

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