

Mayo Clinic Q & A - Dr. John Costello - Asthma - YouTube Aud...

Wed, 8/18 2:01PM 17:48

SUMMARY KEYWORDS

asthma, patient, airways, wheeze, inhaled, bronchodilators, asthmatics, severe, lung function, child, inhaler, trigger, treatment, allergy, mayo clinic, cough, adult, breathlessness, episode, copd

SPEAKERS

Dr. Halena Gazelka, Dr. John Costello, Narrator

- N** Narrator 00:01
Coming up on Mayo Clinic Q&A,
- D** Dr. John Costello 00:04
Asthma is inflammation of the tubes, the airways that carry air from our mouth down into our lungs. The inflammation will cause swelling of the lining. The airways become twitchy. They become hyper responsive, over responsive to a small stimulus.
- N** Narrator 00:19
Asthma can make breathing difficult and trigger coughing, wheezing, and shortness of breath. For some people asthma is a minor nuisance, but for others asthma can interfere with daily activities, and could lead to a life-threatening asthma attack. There is no cure, but asthma can be controlled.
- D** Dr. John Costello 00:36
What you can prevent is the frequency and severity of attacks by the use of regular treatment.

D

Dr. Halena Gazelka 00:44

Welcome, everyone to Mayo Clinic Q&A. I'm Dr. Halena Gazelka. Asthma is a condition in which the airways narrow and swell and may produce extra mucus. This can make breathing difficult and trigger coughing, wheezing, and shortness of breath. Asthma is one of the most common long-term diseases in children, but adults can have asthma too. For some people asthma is nothing but a minor nuisance, and for others it can be a major problem that interferes with daily activities and may lead to life-threatening asthma attacks. Well, joining us today to discuss this is Dr. John Costello. John is a consultant pulmonologist at Mayo Clinic Healthcare in London, and it is a pleasure to have you back today, John.

D

Dr. John Costello 01:27

Thank you. I'm very pleased to be here.

D

Dr. Halena Gazelka 01:29

We had such a great talk about COPD, and I'm excited to have you back to talk about this incredibly common condition of asthma. I think, John, that this is, I would love if you would tell us what is asthma? I think that word is thrown around so much, and I hear people, you know, say they have asthma, they've got an inhaler, and it must be incredibly common, but clarify for us.

D

Dr. John Costello 01:52

Indeed, well asthma as you say, is a condition of the airways. It is very common, and probably much more common than we realize. Maybe one in four of us perhaps in our lifetime will suffer from episodes of wheezing. There's an interesting phenomenon of the increasing incidence of allergy in the population. And of course allergy, inhaled allergy in particular, is directly related to the to the incidence of asthma. So, as I say, asthma is inflammation of the tubes, the airways that carry air from our mouth down into our lungs. The inflammation will cause swelling of the lining, and also the airways become twitchy. They become hyper responsive, over responsive to a small stimulus. And for instance, many asthmatics will tell you that if they laugh, or if there's strong fumes from the back of a car or something like that, that that will make them cough much more easily than a normal person. So, they have an irritable, hyper responsive airway. And then the muscle that surrounds these tubes within our lungs can contract, so the airways narrow. And that's what gives rise to the music in the chest, the wheeze, and indeed is what makes the patient breathless. So, the combination of swelling and contraction of the tubes,

contraction of the diameter of the tubes will make the patient breathless. So, the cardinal clinical features of asthma are cough because of that irritability, wheeze because of the narrowing, and breathlessness also because of the narrowing. So, cough, wheeze, and breathlessness are the features to look out for.

D Dr. Halena Gazelka 03:35

Besides the wheezing, which maybe is unique, that sounds a little bit similar to when we've talked about other disorders like COPD.

D Dr. John Costello 03:43

Indeed, indeed, although with COPD it tends to be a progressive thing. The asthma by its very nature is intermittent. And many asthmatics in between episodes can return entirely to normal indeed if you measure their breathing in the lab, no demonstrable problem. And then when they get another acute episode these narrow again. But there are other forms of asthma, particularly at the most severe end of the spectrum, that can be progressive and that leave permanent changes in the airway, lead to thickening of the of the wall of the airway, and to a poorly reversible component. But by and large asthma comes and goes as it is, by definition, an intermittent condition triggered by a variety of circumstances.

D Dr. Halena Gazelka 04:36

John, does the presentation look different in a young child who may not be able to express what they're feeling or know that it's different?

D Dr. John Costello 04:43

Indeed, yes, but the parents will very often observe that the child has more frequent chest infections than their siblings, and they'll be able to hear wheeze very often. And there may be a family history of wheeze or of asthma. And there may also be a background of allergy in the child, all of which you can put together and make the diagnosis.

D Dr. Halena Gazelka 05:10

What about coughing in a young child who's running or exercising? Can that be a sign of asthma?

D Dr. John Costello 05:17
If it's recurrent, I mean, all children get respiratory infections. Indeed, it's quite a good thing for children to get respiratory infections, because there's some evidence that lack of infections in childhood may indeed lead to greater susceptibility to allergy and in adult life. That's a different story. But the child who gets a cold and they're running around and they're coughing, and it goes away and doesn't come back, that would not be a concern. But if it's a recurrent feature, that's the time to consult your pediatrician and see if your child does have asthma.

D Dr. Halena Gazelka 05:54
So how do you diagnose it if you suspect asthma?

D Dr. John Costello 05:56
Well asthma progressing from childhood into adult life, asthma very often gets better in the early teens. But by and large, once you're an asthmatic, the tendency for it to come back later on in life is always there, given the right set of circumstances. Coming to your question, the diagnosis of asthma is very much based on the history, very much based on the history, cough, wheeze, and breathlessness that is recurrent. Very often wheeze and breathlessness, which during bad episodes is worse at night. And so, if you have a child or an adult who presents with those features, then asthma has to be top of your list for diagnosis. There are other conditions that may do it. And in later adult life, it may merge into COPD, and indeed there is an overlap syndrome. But in the younger patients, and perhaps the non-smoking younger patients, those symptoms must make the physician think about asthma as a diagnosis.

D Dr. Halena Gazelka 07:04
You know, previously we had talked with COPD about imaging studies or lung function tests. Are those definitive in the diagnosis of asthma?

D Dr. John Costello 07:16
It's an interesting question, imaging is not particularly helpful even for asthma. You may see it, even with CT scanning, the features are never diagnostic, by and large. So, imaging may show an overinflated chest but really not a whole lot else. Even sometimes in quite severe asthmatics. Lung function testing is critical, because it will demonstrate to you that the patient blowing out into the lung function machine that their airflow is obstructed.

And very important to this part of it, is if you give them the inhaler, the bronchodilator inhaler, and you measure their lung function again afterwards, it should have improved. Sometimes if the asthma is going through a severe episode, you won't demonstrate any improvement. So, you've got to be careful to interpret lung function, test by test. And always, always take into account the history. There are some other rare conditions that masquerade as asthma, sometimes a central tumor in a large airway. So, the patient that doesn't respond to inhalers who has severe airflow obstruction but doesn't respond to inhalers may need other investigation.

D

Dr. Halena Gazelka 08:36

I want to get on to that. But I want to ask you something before I forget to ask it. Do we know why asthma often improves as individuals age?

D

Dr. John Costello 08:48

No, there's no definitive, it's very interesting, and there may be differences between boys and girls. But it tends to improve in the teenage years. But those of us who see adults, as an adult physician myself, the asthmatics that we pick up in their 20s and 30s, if you take a careful enough history, you'll often find that they had asthma in childhood. But the reason why it improves, whether it's hormonal or otherwise, isn't clear, but it does tend to come back. And if you've been a childhood asthmatic, and it disappears when you're 14 years of age, and then at the age of 25, you might be allergic to pollen, and you get an upper respiratory tract infection, given the right set of triggers it may set it off again. So, the tendency for it to occur is there.

D

Dr. Halena Gazelka 09:43

John, what is meant by an asthma attack, and how do you treat it when it occurs?

D

Dr. John Costello 09:47

Right. This is once again a very important question, and I described earlier the pathology of asthma. It is like the airways narrow, and they get inflamed, you get more mucus formed because the body responds to infection by making mucus because mucus carries infection away. So, the airways get inflamed, the airway says to the body, I don't like that, and it tries to narrow, which is when this muscle contracts. So, in a severe episode, you'll get plugging of the airways, you get inflammation within the airways and contraction of the muscle, and all of these increases the resistance to flow in and out of the lungs. And therefore, the patient presents with usually with the background of asthma, but not

always with acute breathlessness, acute squeeze that are frequently worse at night. I emphasize that because asthma, bad asthma is almost always worse during the night for reasons that are not fully explained. So, cough, wheeze, and breathlessness very often worse during the night, over recurrent nights. That's how acute asthma, and as you sit across it, as the physician sits across the desk, from that patient, you may be able to hear the wheeze without using your stethoscope. Sometimes if it's very, very severe, wheeze disappears because the patient is shifting so little air in and out of the lungs, that you develop what's called a silent chest. And that means the asthma is very severe indeed. And that's when other tests, when spirometry or peak flow measurement of the arterial oxygen in the finger with a pulse oximeter, these sorts of basic investigations become very important.

D Dr. Halena Gazelka 11:37
And then how do you treat them?

D Dr. John Costello 11:40
Well, you are firm in your diagnosis, both in adult and childhood, inhalation therapy is the way to begin. An inhalation therapy both for the treatment the more severe asthmatics in the long term, inhaled bronchodilators and inhaled corticosteroids are a cornerstone of the treatment. For the treatment of acute severe asthma, nebulized bronchodilators, the machine you plug in the wall and put a rather larger dose of bronchodilators such as albuterol, as it's called in the United States, and possibly and an anticholinergic for the patient to inhale. If the problem is in the airway, it's best to get the drugs we need directly to the airway. So, the inhale route is by far the treatment of choice. Secondly, if the episode is severe, it is critical to give the patient corticosteroids. And they can be given orally or intravenously usually orally is sufficient and a dose of in the region of 40 to 60 milligrams of prednisolone a day, over a period of days in decremental doses. So, inhaled bronchodilators in larger doses, and corticosteroids, and if the patient's not responding, then admission to the hospital to make sure that these medicines are administered efficiently, and to observe the patient's progress because it can go, the vast majority of patients improve, but some do not, and may need more intensive treatment in the critical care unit.

D Dr. Halena Gazelka 13:14
We talked a little bit earlier about triggers. And I'm wondering when we hear people say things like exercise induced asthma or allergen induced asthma are those just their particular triggers?

D

Dr. John Costello 13:26

I was going to bring, I'm glad you brought that up. Exercise induced asthma particularly in children is extremely common. Now, it depends on the climate you live in. I mean, living in the British climate in the cold winters, the classical trigger for teenage asthma is cross country running. So, the teenager is out in cold dry air, and cold dry air is a powerful trigger for the bronchi to constrict. So, the exercise induced asthma is a very common phenomenon. And it's the same mechanism as I described earlier, when a patient laughs, because when you laugh, you take a big breath in. So, you take cool air in, and the airway doesn't like it and makes you cough. So, you know laughter won't necessarily precipitate acute asthma, but it can make you cough. So, that irritability of the airway to cold air is important in exercise induced asthma. This can be prevented in many patients by giving an inhaled bronchodilator before the exercise. So, the teenager who's going out for a cross country run, a couple of puffs of an inhaler, such as albuterol, at 20 minutes before they start to run, and may well block the exercise induced asthma.

D

Dr. Halena Gazelka 14:44

Can you prevent asthma?

D

Dr. John Costello 14:48

There's a very big genetic component to asthma as there is to allergy that the absolute definition of the genes involved is still under investigation and still much debatable. So, the prevention of asthma as a condition is quite difficult. What you can prevent is the frequency and severity of attacks by the use of regular treatment. Now, not every asthmatic who presents either in childhood or in adult life needs regular treatment, but there are some asthmatics who get attacks so frequently and so demonstrably, that you need to give them an inhaled treatment every day. And the cornerstone of this treatment is a regular inhaled corticosteroid. And there are a variety of these on the market. So, a regular inhaled corticosteroid, and there are stepwise guidelines for introducing occasional inhaled bronchodilators. And then if that doesn't work for introducing an inhaled corticosteroid and if that doesn't work, you can introduce other oral drugs, and then there are highly specialized for severe, particularly allergic type asthmatics with monoclonal antibodies for more advanced disease that is not responding to conventional regular inhaled therapy. So, that's the standard sort of stepwise progression of the treatment.

D

Dr. Halena Gazelka 16:17

And I know I have seen in children's charts, adults too, here they use like asthma action plans and they're sort of like a stoplight, green light, yellow light, red light,



Dr. John Costello 16:28

Indeed, and all of the features I've described in terms of symptomatology, in terms of the progression of the condition, in terms of recognizing when the asthma is not in good control, and when the asthma was out of control, all of those things. There's a lot of education. Asthma nurses play a huge part in developing the educational programs for these patients, both in children and adults.



Dr. Halena Gazelka 16:53

Thank you so much, John. It was very interesting.



Dr. John Costello 16:56

Thank you very much for having me.



Dr. Halena Gazelka 16:58

Our thanks to Dr. John Costello, pulmonologist and consultant physician at Mayo Clinic healthcare in London for being with us again today. I hope that you learned something. I know that I did. And we wish each of you a wonderful day.



Narrator 17:11

Mayo Clinic Q&A is a production of the Mayo Clinic News Network and is available wherever you get and subscribe to your favorite podcasts. To see a list of all Mayo Clinic podcasts, visit newsnetwork.mayoclinic.org. Then click on podcasts. Thanks for listening and be well. We hope you'll offer a review of this and other episodes when the option is available. Comments and questions can also be sent to mayoclinicnewsnetwork@mayo.edu.