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2022 ERS/ESC PH Guidelines on Diagnosis

Announcer:

Welcome to CME on ReachMD. This episode is part of our MinuteCE curriculum.

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Dr. Elwing:

So welcome. My name is Dr. Jean Elwing. And I'm a Professor of Medicine and the Director of the Pulmonary Hypertension Program at the University of Cincinnati. And we're going to be talking today about essential aspects of the new 2022 ERS/ESC PH Guidelines on Diagnosis, top-line takeaways.

So do you know the new hemodynamic cutoffs for pulmonary hypertension as proposed by ERS/ESC? Well, we're going to talk about that. So the new definitions have endorsed some and expanded some in the 2022 ESC/ERS guidelines. Definitions, as always, are based on hemodynamic assessment by right heart catheterization. Hemodynamics represent the central elements of characterizing pulmonary hypertension, but the final diagnosis and classification should reflect the entire clinical context and all results of the investigations.

So what are the changes? Well, number one, they endorse the pulmonary pressure change of a mean of greater than 20 as a diagnostic criteria cutoff for pulmonary hypertension that was proposed by the 6th World Symposium. Number two, they revised the cutoff for pulmonary vascular resistance from 3 to greater than 2. And thirdly, they proposed a definition of exercise-induced pulmonary hypertension. And we're going to go through each one of those.

So first, I'd like you to look at this slide, which shows you what the criteria are for each type of pulmonary hypertension. All resting pulmonary hypertension requires a mean pulmonary pressure greater than 20. If you have pre-capillary disease, that from the pulmonary blood vessels, your mean pressure is more than 20, but your wedges in the more normal range 15 or less, and your PVR, the resistance in the circuit is high, at greater than 2. If it's isolated post-capillary from the left heart, your pressure is high, but your wedge is high, which is driving those pressures and there should not be increased resistance in the circuit, and PVR is 2 or less. If you're combined, you have a little bit of both, high pressures with elevated wedge and elevated PVR. And the exercise-induced pulmonary hypertension was defined as a mean PAP over cardiac output slope between rest and exercise of greater than 3. And we're going to go through each one of these.

Alright, let's start with the mean PA pressure definition for pulmonary hypertension. Well, before we can talk about abnormal, let's talk about normal. A comprehensive systematic literature review analyzed right heart catheterizations, more than 1,100 healthy controls and individuals enrolled in studies from 47 different studies. Supine position rest normal pulmonary pressure is the mean of 14 plus or minus 3. Other studies showed us that above 20, we started to have a mortality increase. And in a retrospective analysis of veterans looking at more than 21,000 right heart catheterizations from 2007 to 2012, following patients for more than 2 years, there was a mortality hazard increase above a mean PA pressure of 20. And you'll see here even starting at 19, these pulmonary pressures are increasing.

So what about the PVR? PVR is found to be normal at around 2 Woods units or less. And in a retrospective analysis of U.S. veterans right heart catheterizations looking at more than 40,000 of them from 2007 to 2016, following them for more than 1,100 days, the

adjusted hazard ratio for all-cause mortality was stratified by PVR. And that all-cause mortality increased above a PVR of 2.2. And it applied not only to the patients who had generally increased pulmonary pressures of a mean of 19 or more, but even a greater degree to those who had a mean pressure that was 19 or greater and a wedge that was 15 or less, and you can see that in these diagrams here.

Now thirdly, they looked at exercise-induced pulmonary pressures and what we should use as a cutoff for the definition of this. Mean PA pressure over cardiac output slope is age dependent. Normal is 1.6 to 3.3. And most people have pressures at pressure change in that range. A mean PAP cardiac output slope greater than 3 is not physiologic in subjects less than 6 years of age and only rarely occurs in older patients. So when they looked at 45 eligible studies with a total of more than 5,500 subjects, they found that this mean PAP over cardiac output slope during exercise that increased greater than 3 the was associated with impaired survival. So that's why they introduced this idea of a new definition of exercise-induced pulmonary hypertension.

So in summary, the definitions of pulmonary hypertension are based on hemodynamic assessments by right heart catheterization. Hemodynamics represent the central elements of characterizing pulmonary hypertension, but full evaluations are needed. The new guidelines endorsed the pulmonary pressure cutoff of greater than 20 mean PA pressure to diagnose pulmonary hypertension that was previously proposed by the 6th World Symposium. They also recommended to change the cutoff in terms of PVR for pre-capillary disease to greater than 2. And they defined exercise-induced pulmonary hypertension by a mean PA over cardiac output slope of greater than 3.

So thank you so much for joining me today.

Announcer:
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