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Time needed to complete: 1h 55m

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Making the Most of the Echo Report (VEST)

Announcer:

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Dr. Sadek:

Hi, this is Ahmed Sadek, Assistant Professor of Medicine at Temple within the Pulmonary Hypertension Group. And in this episode, we'll talk about how to best utilize the echo report when looking into pulmonary hypertension.

So in particular, I wanted to discuss this discussion by - this paper by Dr. Vaidya and the Pulmonary Hypertension Group. And this is the VEST, the Virtual Echocardiography Screening Tool, otherwise known as VEST. And this was meant to be a scoring system to help distinguish between pulmonary hypertension left heart disease and pulmonary hypertension pulmonary vascular disease, using only the echo report. And this is important in those situations where you might not have the echo available to directly review, or one may not have the expertise or experience to directly review the echoes.

And so the score is ranged from -3 to +3, with more positive scores suggesting a higher probability of PH pulmonary vascular disease, and negative scores suggesting a higher probability of PH left heart disease. And PH pulmonary vascular disease in this study was defined by mean PA pressure of greater than 25, a PVR of greater than 3, and a wedge of less than or equal to 15.

And the goal of the study was to derive simple scoring parameters that were actually available in most echo reports. So the emphasis was on simplicity.

So the three scores here were the E/e prime. And that is a indirect measure of estimate of left heart filling pressures so with higher numbers equating to higher left heart filling pressures. So E/e prime of less than or equal to 10 gives you +1. A left atrial size that is normal or only mildly enlarged, gives you another +1. And the presence of systolic interventricular septal flattening gives you another +1. And so positive numbers, a total positive score is more likely related to Group 1 PH. And if you don't have these features, you get negative points. And that correlates more with left heart disease, and left heart failure Group 2 PH.

And so in terms of the performance of the score, a VEST score of greater than zero was 80% sensitive and 75% specific for PH pulmonary vascular disease with an AUC of 0.81. And a VEST score that was +3 was 92.7% specific with a positive predictive value of 88%. And the important thing to note is that significantly improved prediction over the standard Doppler estimated PASP, which only had an AUC of 0.56.

And then the score was then compared in a validation group. And in the validation group, the performance was even better. You can see here that the VEST score in the validation cohort was 100% sensitive and 75% specific for PH PVD with an AUC of 0.94. And the majority of the patients with a positive VEST score who did not meet criteria for PH PVD had a score of around +1 and had mixed physiology PH. In other words, a PVR of greater than 3, but with a wedge pressure that was also greater than 15. And the mean PVR in that group was 4.3 Wood units.

So a few examples. This is example one. And what you can see is that the E/e prime is 2.9, suggesting normal left heart filling

pressures, left atrial size is normal. And the septal motion is abnormal, consistent with kind of RV pressure overload as we call it. And so these are all positive points. And so you get a score of +3.

This is in contrast to this patient. So this patient has a normal interventricular septal motion. So that's +1 point, a very high E/e prime suggestive of high left heart filling pressures, and another -1, and a severely dilated left atrium, which is another -1. So this patient has a score of -3.

All right, so these are the examples that we just went over. And in our first case, with the score of +3, the mean PA pressure by right heart cath was 44. The wedge pressure was only 6 with a PVR of 8.6 Wood units, and the echo, these are the features that that resulted in the positive points. And then on the right, example 2, the score of -3, you have a mean PA pressure that's high at 46, nut the wedge is also high at 27 and your PVR of 2.2 Wood units is minimally elevated. So this is more consistent with Group 2 PH. And these are the features that gave the negative points.

So in summary, the VEST score is a really nice and simple way to kind of estimate the pretest probability for PH pulmonary vascular disease, even when the images are not present. And you really can have an understanding of the physiology even before going to right heart catheterization.

Thank you, guys, for your time. I hope this was helpful. And I hope this can be used to greater effect in the future as well as I think it is quite a useful tool. See you in the next episode.

Announcer:

<mark>Keach</mark>Ⅳ

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