LETTERS TO THE EDITOR

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Interpreting the Echocardiogram in TAPVC

To the Editor:

This is regarding an exchange of letters to the editor in Circulation 52: 527–528, 1975. I do not believe Doctors Paquet and Gutgesell have adequately excluded other interpretations of some of their published echocardiograms in Circulation 51: 599, 1975.

It is true that apparent aorta-mitral valve discontinuity where such discontinuity does not exist may be recorded with angulation of the transducer. However, when such angulation occurs a beam which is not directed cross-sectionally to the aortic root may give falsely increased diameters. Such angulation in an irregularly-shaped cavity such as the left atrium may not yield diameter measurements comparable to those for which normal values have been obtained with transducer beams perpendicular to the anterior chest wall. Also such angulations are more likely to yield reverberations of strongly reflecting structures such as the aortic walls posterior to the aorta. Just because a diagnosis of total anomalous pulmonary venous connections (TAPVC) with a common pulmonary venous chamber (CPVC) has been made by other techniques does not necessarily mean this has been demonstrated on the echocardiograms published. It is also difficult to accept that a structure labelled as posterior left atrial wall in figure 6A of their article moving similarly to the aortic root could, by adherence to and pulling of the anterior wall of the CPVC, produce a discrete pre-systolic anterior movement of the posterior wall of the CPVC. When such transducer angulations are used that “add a great deal of subjectivity to the interpretations of echocardiograms,” then it is hazardous to assign too specific interpretations to such echocardiograms.

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To the Editor:

We enjoyed the article of Paquet and Gutgesell who recently described specific echocardiographic features of total anomalous pulmonary venous connection (TAPVC). They report that the combination of right ventricular diastolic volume overload (RVDVO) and demonstration of an echo-free space dorsal to the left atrium is strongly suggestive of TAPVC and should allow an early diagnosis in infants, although the age of their seven patients ranged from four months to ten years of age.

Our recent experience with echocardiographic recording of two newborns with this malformation raises some comments:

1. Signs of RVDVO can be lacking in the newborn period. In our two patients (1 day and 13 days old), RV diastolic diameter was within normal limits according to Solinger’s normal values and septal motion appeared normal with systolic posterior movement at the chordae tendineae level (fig. 1 A and B). In these patients, there was clinical, hemodynamic and angiographic evidence of pulmonary venous obstruction. In the first patient this obstruction was secondary to a stenosis at the middle part of the left superior vena cava to which all pulmonary veins were connected; in the second patient it was secondary to a stenosis at the junction of the common pulmonary vein and portal vein. Because of these obstructions, pulmonary blood flow was not increased, pulmonary pressure was at systemic level, so signs of RVDVO could not develop. Roentgenograms did not show cardiac enlargement. Since most of the patients seen with this malformation in the newborn period present pulmonary venous obstruction, we would not expect to find echocardiographic features of RVDVO. This is in agreement with Godman et al., who report that the echocardiographic features may be within almost normal limits in newborns. One would expect to find RVDVO features only in patients with increased pulmonary blood flow. Glaser et al., report paradoxical septal motion and excessive tricuspid valve movements in two infants with TAPVC but there is no mention of hemodynamic findings in their abstract.

FIGURE 1. Echocardiograms from case 2 (TAPVC in portal vein) demonstrating a lack of signs of right ventricular diastolic overload (RVDVO) and presence of an echo-free space (AV) behind the left ventricular posterior wall (LV PW). On the left the acoustic beam is directed through the middle part of the left ventricle (LV) and on the right at chordae tendineae level (CT). RV = anterior wall of right ventricle, RVC = right ventricular cavity, IVS = interventricular septum, MIV = mitral valve.

FIGURE 2. Echocardiograms from a normal newborn (A) and from case 2 (B), demonstrating similar strong and regular echo behind the aortic root (A.O. root). RVOT = right ventricular outflow tract, LA = left atrium.
Letter: Interpreting the echocardiogram in TAPVC.
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