

## ABSTRACT

# Congenital Cardiovascular Disease for the General Radiologist: More Common Than you Think!

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Every thoracic computer tomography (CT) image dataset encompasses the heart. Nevertheless, it is often disregarded in the radiologist's report; especially congenital heart disease may go unreported. We present a number of congenital cardiac conditions that can be detected even on untriggered CT images.

Abnormal coronary origin and course (between pulmonary trunk and aortic root), although not very common, is responsible for sudden cardiac death as a presenting symptom in a retrospective postmortem series of congenital heart disease; mostly young people, and many of them athletes, are affected.

Intramyo-cardial course and myocardial bridging of mainly left anterior descending coronary artery are more difficult to connect to cardiac symptoms or even to cardiac sudden death. It is, however, quite easy to detect even on transverse images by the typical 'coronary dive'. It can explain worrying electrocardiographic abnormalities, as well as angina.

A bicuspid aortic valve (BAV) is very difficult to pick up on transverse CT images, but easy to depict in the proper reconstruction planes, especially in comparison with the occasionally very challenging imaging by ultrasound. It is emphasized that BAV is rarely a lesion on its own: beware for ascending aortic dilation, aortic coarctation, and even left ventricular cardiomyopathy.

A persistent left superior vena cava should be noted and reported. It can seriously ruin power bolus injection

for CT imaging. It can equally complicate positioning of a Swan-Ganz catheter or pacemaker/Implanted Cardioverter Device (ICD) leads, due to absence of the innominate vein. Rarely a left-to-right shunt or more complex congenital heart disease is present.

Thoracic CT can help solve the conundrum of an unexplained dilated right ventricle, where obvious causes such as pulmonary emboli and arrhythmogenic right ventricular cardiomyopathy have been ruled out. An abnormal pulmonary venous return or a sinus venosus defect, for example, can easily be found.

A dilated aortic root in a young patient or an aortic dissection in a young, tall and slender patient should raise suspicion of Marfan Syndrome, which is important because the therapeutic approach of aortic dissection in Marfan syndrome is always surgical. Although Marfan syndrome is classified as a connective tissue disease, it should be borne in mind that it affects the heart and aorta of patients from an early age on.

In contrast to CT, Magnetic Resonance is a powerful tool to quantify volumes and shunts in known congenital heart disease. With the aforementioned lesions in mind, the radiologist will be capable of reporting congenital cardiovascular lesions that may have importance for the patient, either for the query at hand, or to anticipate symptoms or problems later in life.

## Competing Interests

The author declares that they have no competing interests.

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