The Contribution of 3-Dimensional Magnetic Resonance Imaging in Congenital Cardiac Abnormalities

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Clinical Image

The atrial septal defect (ASD) is a common congenital abnormality with wide variety of its anatomy. When the indication for surgical occlusion exists, cardiac surgeon has to know preoperatively the exact defect and the position of the pulmonary veins. With the use of the 3D MRI, the mapping of the interatrial septum and the identification of the anatomic surrounding structures is feasible. In this paper we would like to show the fantastic 3D MRI images. We show the defect and the exact position of the pulmonary veins. In the international bibliography has been proposed many imaging modalities in this issue. Transthoracic Echocardiography and Cardiac Magnetic Resonance Imaging [1-3], are proposed for many authors is this setting. The 3-D transoesophageal echocardiography [4] and the use of multidetector computed tomography assessment are also applied in order to better recognize the abnormalities [5]. The ASD account approximately 13% of congenital cardiac abnormalities, with a range of prevalence from 1.6 to 1.8 of 1000 live births. There are five major types of ASD which include the secundum and primum types, sinus venosus and coronary sinus defects, and patent foramen ovale [6]. These defects are often undiagnosed at birth. It often can be found incidentally on routine imaging. Understanding their type, size, location, and presence or absence of other congenital defects is paramount in determining the appropriate
therapy [6]. The majority of ASD is usually operated on median sternotomy other than the percutaneous closure. This decision is based on some parameters of the defect, like its size, its shape, and the location with respect to the surrounding tissue [6]. In this imaging paper we would like to show some interesting pictures taken with the use of the 3D MRI. In Figure 1 with the yellow arrow is seen the right superior pulmonary vein. The red arrow shows the right inferior pulmonary vein. As seen in this image, the origin of these two veins is in extreme vicinity. Figure 2 is an MRI with 3D reconstruction. Red arrows: superior and inferior right pulmonary veins. Star: right atrium. Finally the Figure 3 is another MRI; 3D reconstruction. Star: right atrium with mixed arterial (pink) and venous (blue) blood. The two blue arrows: venous blood coming from the superior and inferior vena cava. Red arrows: arterial blood coming from the pulmonary veins.

References


