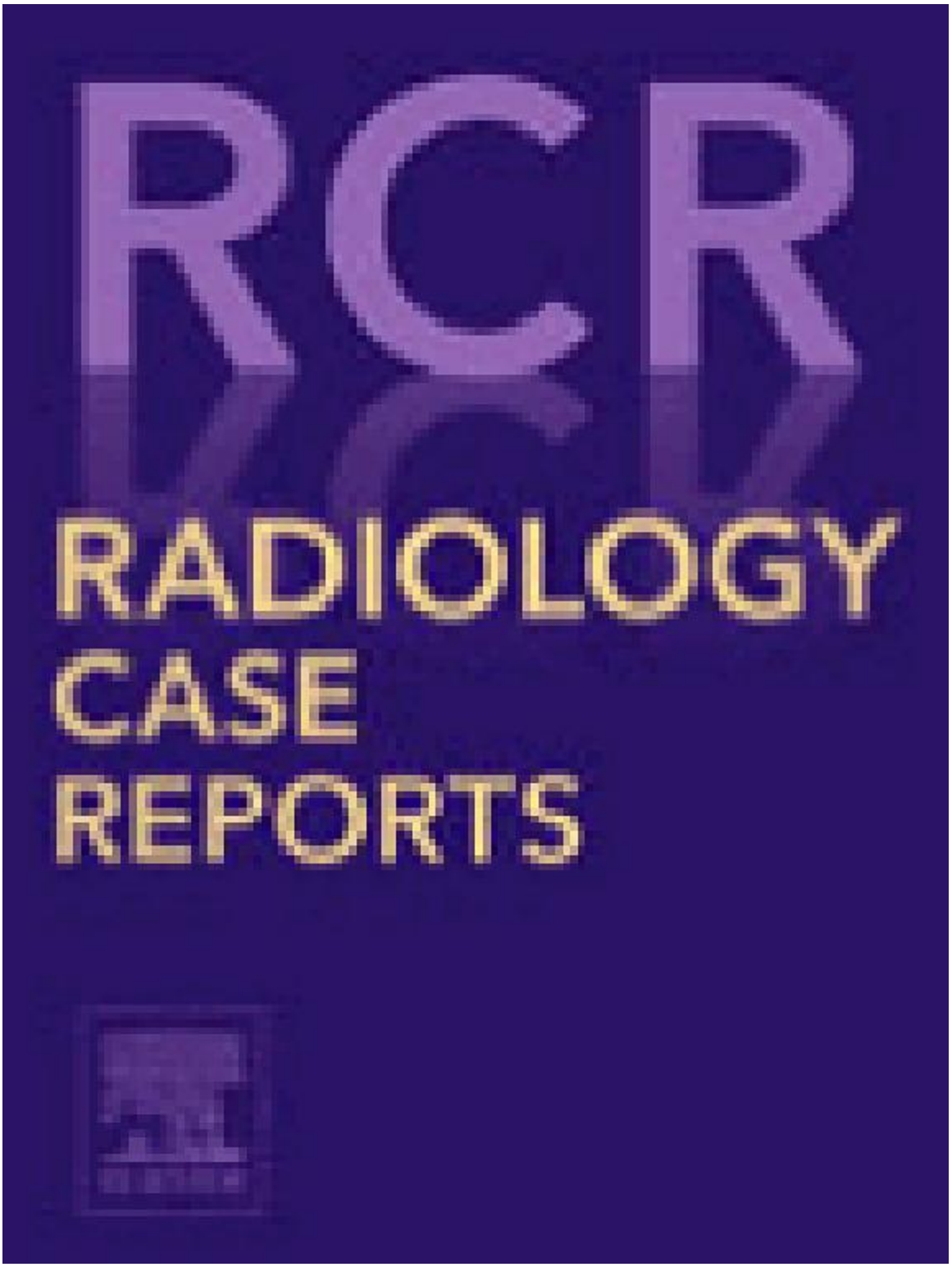
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Radiology Case Reports

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Imaging clinical information using dual-source 128-MDCT in two cases of pulmonary atresia and ventricular septal defect

Ristaniah D. Soetikno, MD, and Robby Hermawan, MD

Two cases of PA-VSD were examined by computed tomography angiography (CTA) using dual-source 128-MDCT to reveal the anatomy and morphology of the pulmonary circulation. The first case was diagnosed as PA-VSD type B, while the second case was diagnosed as PA-VSD type A. These cases show that dual-source 128-MDCT can be used to provide clinical information for PA-VSD with the appropriate examination protocols and post-processing techniques.

Introduction

Patients with pulmonary atresia and ventricular septal defect (PA-VSD) need clinical information, specifically the anatomy and morphology of the pulmonary circulation, to determine the surgical approach and overall outcome. Because early treatment can influence the outcome, the information should be acquired as early as possible, while the patient is still young. Capturing meticulous information in a young patient, whose anatomical structures are still small, is a challenging task in imaging. Dual-source 128-MDCT is an alternative, noninvasive imaging modality that can be used for that purpose. Other information, such as coronary and intracardiac abnormalities, can be shown as well.

Case report 1

The first patient was a 19-month-old girl who had delayed growth and development without obvious signs of dyspnea and cyanosis. (The cyanosis was observed only when the patient was crying forcefully.) The patient had never experienced any serious clinical condition that required hospitalization; delayed growth and development was the major problem that led to a thorough clinical examination. The patient had a normal birthweight (2800g), but weight when examined at 19 months was only 5000g. Clinical examination revealed a continuous heart murmur, and chest x-ray showed a "boot-shaped" heart with an upturned cardiac apex and concave pulmonary arterial segment. An echocardiography examination diagnosed the patient with PA-VSD and major aortopulmonary collateral arteries (MAPCAs). The CTA examination was requested for depicting the anatomy and morphology of the pulmonary circulation.

The patient was examined using a dual-source 128-MDCT scanner (Somatom Definition Flash, Siemens Healthcare). Postprocessing of the image data was performed using a Leonardo 3D postprocessing workstation with Syngo software (Siemens Healthcare). Image-reformatting techniques such as curved planar reformation (CPR), maximum-intensity projection (MIP), minimum-intensity projection (MinIP), and volume-rendering technique (VRT) were used to get the information.

The high-density contrast media filled the superior vena cava, right atrium, and right ventricle, as well as the ascending aorta, aortic arch, and descending aorta. But the contrast media density in the left atrium and left ventricle was not as high as in the aorta. Thus, the majority of the aortic flow was from the right ventricle (Fig. 1). There was no stenosis or dilatation of the ascending aorta, aortic arch, or descending aorta. The aortic arch branched to the

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The authors are in the Department of Radiology in the Faculty of Medicine at the University of Padjadjaran/Hasan Sadikin Hospital, Bandung, Indonesia. Contact Dr. Soetikno at ristasoetikno@gmail.com.

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