Anomalous origin of the right coronary artery arising from the left anterior descending artery in a case with single coronary artery anomaly: multi-detector computer tomography imaging

Tek koroner arter anomalisi olan ön inen koroner arterden köken alan sağ koroner arter olgusu: Çok kesitli bilgisayarlı tomografi bulguları

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Discussion

Coronary artery anomalies occur at least in 0.3–1.2% of the population (2). An isolated single coronary artery only occurs in about 0.024% of the population (3). Although they are mainly asymptomatic, some coronary anomalies may cause sudden cardiac death or other symptoms of myocardial ischemia, especially in young adults. Congenital abnormalities associated with myocardial ischemia are coronary artery fistula, the LAD originating from the pulmonary artery, anomalous origin of the LAD from the RCA or the right coronary sinus.

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and anomalous origin of the RCA from the LAD or the left coronary sinus. The anomalous origin of the RCA is a rare condition, but has clinical importance because nonfatal or fatal myocardial infarction and sudden death occur in up to 30% of patients (4).

The ectopic origin of the RCA from the LAD artery, a subgroup of single coronary artery, is relatively rare and more benign than other types of anomalous origin of the RCAs (5). The causes of myocardial ischemia in this anomaly remain unclear, but the acute angle take-off and kinking of the RCA as it arises from the LAD, flap-like closure of the abnormal coronary orifice, compression of the RCA when it courses within the aortic wall or between the aorta and the pulmonary artery, and spasm of the anomalous RCA have been thought to be the possible mechanisms (6). In our case, the RCA was not originating from the right sinus of Valsalva and was not coursing in the right atrioventricular groove. However, there was an ectopic coronary artery originated from the LAD and coursed toward the RCA territory. In our case, the RCA did not course between the aorta and the pulmonary artery.

The future development in the MDCT hardware which will provide higher spatial resolution and allow motion analysis during the whole cardiac cycle would be more informative for the evaluation of the mechanisms by which myocardial ischemia is provoked in patients with an anomalous origin of the RCA.

Conclusion

For diagnosis of coronary artery anomalies and treatment planning, it is important to know the distribution of major arteries and the extent of compensatory perfusion. MDCT, with especially 3D VR and MIP techniques, provides us with a high quality and accurate modality to observe and diagnose coronary anomalies. The origin and course of all the anomalous coronary arteries were observed clearly with a high average diagnostic image quality.

References