Simultaneous Treatment of Native Aortic Coarctation Combined With Patent Ductus Arteriosus Using a Covered Stent

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Objectives: Stents have assumed an important role in therapeutic catheterization procedures for patients with congenital heart disease. In this article, we report on the use of a covered Cheatham-Platinum (CP) stent to treat coexistent coarctation of the aorta and patent ductus arteriosus.

Methods: A 22-year-old boy with aortic coarctation and patent ductus arteriosus underwent simultaneous treatment of native coarctation and closure of ductus arteriosus using a covered Cheatham-Platinum stent. Cardiac catheterization was performed under local anesthesia and vein were cannulated. Rhexin 10F guiding wire was used. A second aortogram showed a tight juxtaductal coarctation of the aorta with poststenotic dilatation of the descending aorta and a moderate-size patent ductus arteriosus measuring 3.1 mm at the narrowest point. The minimum diameter of the aortic coarctation was 7 mm, the isthmus 20 mm, and the aorta at the level of the diaphragm 24 mm.

Results: Repeat aortogram showed a good result with complete occlusion of the ductus arteriosus with apposition of the stent to the aortic wall. There was no evidence of dissection or aneurysm formation. The diameter of the coarctation segment after stent implantation measured 16 mm and the diameters above and below the residual waist were 18 and 20 mm, respectively. There was no gradient across the stented segment. No complications occurred during the procedure.

Conclusions: This technique may be used as an alternative to other forms of interventional therapy or surgery for this combination of lesions in adolescents.

Clinical applications of echocardiography in transcatheter device closure of atrial septal defect

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Objectives: To report experiences of transcatheter device closure of atrial septal defect with the help of echocardiography and X-ray.

Methods: Chose 678 inpatients including 286 male and 382 female whose age were 3~78 year old (average age was 15.68±10.20 year old) who were diagnosed with atrial septal defect according to history and echocardiography in departments of cardiology from January 2002 to October 2013. All the patients were diagnosed with atrial septal defect by transthoracic echocardiography. 367 inpatients who were older than 14 were required to have a transthoracic echocardiography check. Detected the size, aortic edge and aortic contralateral edge at the level of short axis view of the aortic defect size, mitral edge and top edge of atrial at the level of apical four-chamber view. Detect defect size, edge of the superior vena cava and edge of the inferior vena cava at the level of 2-atrium plane below the xiphoid process. Make a atrial septal defect closure with the help of echocardiography and X-ray according to the expert consensus of common congenital heart disease interventional therapy.

Results: The maximum defect size of 678 inpatients detected by transthoracic echocardiography was 25.5±11.16mm, the superior and inferior vena cava edge of 98 inpatients was fuzzy. The maximum defect size of 367 inpatients with the help of transthoracic echocardiography was 28.26±10.05mm, their superior and inferior vena cava edge were clear, but the maximum defect size was 26.06±10.13mm with the help of transthoracic echocardiography (P<0.05). 651 inpatients successfully accepted transcatheter occlusion and the success rate was 98.09%. The size of occluder was 32±11mm. We analyzed the 27 unsuccessful cases and found that there were 12 unsuccessful cases whose aortic contralateral edge and inferior vena cava edge were unsuitable, the failure rate was 100%, 6 of 8 cases whose inferior vena cava edge was unsuitable, the failure rate was 75%, 9 of 15 cases whose aortic contralateral edge was unsuitable, the failure rate was 60%, the contrast in whose aortic edge or the superior vena cava edge was unsuitable, the failure rate was 0.

Conclusions: The atrial septal defect size detected by transthoracic echocardiography or transthoracic echocardiography had no statistically significant difference. The success rate of occluder was higher with the help of transthoracic echocardiography. Patients have atrial septal defect with an unsuitable aortic contralateral edge and inferior vena cava edge were inappropriate to accept interventional therapy, aortic contralateral edge or inferior vena cava edge was unsuitable also affect the success rate of interventional closure.