Chronic Hypoxia Secondary to a Right to Left Shunt through an Atrial Septal Defect in a Patient with a Large Eustachian Valve Successfully Treated with the Amplatzer Occluder Closure Device

Nicolas W. Shammas, Eric J. Dippel, Stephanie Egts, Jane Moore

From the Midwest Cardiovascular Research Foundation, Genesis Heart Institute Affiliate, Cardiovascular Medicine, PC, Davenport, Iowa

BACKGROUND

Chronic hypoxia can result from right to left shunting in a patient with an atrial septal defect (ASD) and severe elevation of right-sided filling pressures. We present a rare situation where right to left shunting occurred in the presence of a mild increase in pulmonic pressures in a patient with a large eustachian valve partly directing right atrial flow into the left sided chambers of the heart.

CASE REPORT

A 47-year old male presented to our office for evaluation of chronic hypoxia and an ASD. Oxygen saturation has been chronically in the 88-90% on room air. He has a history of sleep apnea and has been using CPAP routinely. Spiral CT angiography to the lungs ruled out chronic pulmonary emboli. His pulmonary function tests were unremarkable and he has not been a smoker. Transesophageal echocardiography confirmed the presence of a large ASD and a large eustachian valve extending toward the ASD with a right to left shunt directed toward the ASD. A left and right heart catheterization was performed along with a pulmonary angiogram. The coronary arteries showed no significant disease or congenital abnormalities. The pulmonary angiogram confirmed no indication of pulmonary AV malformations (normal filling time to the left atrium) or pulmonary emboli. Right sided filling pressures were as follows (in mmHg): RA 15, PA 35/17, wedge 17. No left to right shunting was detected by oxygen saturation analysis. Under Intracardiac Echocardiography (ICE, Siemens, AccuNav), temporary closure of the ASD (2 cm) was performed in the lab with immediate increase in O2 saturation to 96% on room air and no increase in right ventricular pressures. Closure of the defect was then carried on using the ASD Amplatzer occluder 22 mm. Grade 3 shunt pre-procedure was down to Grade 1 shunt immediately post-procedure with an increase in O2 saturation to 96% on room air. Patient was doing well with significant increase in energy level.

CONCLUSIONS

Percutaneous closure of an ASD under ICE guidance and the Amplatzer ASD occluder was very effective in eliminating hypoxia in a patient with right to left shunt and a large culprit eustachian valve.