

A Case of Patent Ductus Arteriosus in an 88-Year-Old Patient

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Abstract

The patient was an 88-year-old woman. Chest X-rays revealed cardiomegaly, pulmonary congestion and pleural effusion. Electrocardiogram was sinus rhythm with STT changes. Transesophageal echocardiography showed the left ventricular ejection fraction 27% with pulmonary hypertension (67 mmHg). A shunt flow was noted from the descending aorta to the pulmonary artery with a Qp/Qs of 1.3. By day 7, the pleural effusion had dissipated. However, she later passed away. A literature search revealed that she is the oldest patient to be diagnosed with patent ductus arteriosus (PDA) by transesophageal echocardiography and that she is the third oldest reported case of PDA.

Keywords: Patent ductus arteriosus; Eldest patient; Congenital heart disease; Transesophageal echocardiography

Introduction

The oldest patient with a patent ductus arteriosus (PDA) was a 92-year-old woman [1] and the second oldest patient was a 90-year-old woman who was diagnosed at autopsy [2]. PDA accounts for 6-8% of adult congenital heart diseases and is the third most common type after atrial septal defect and ventricular septal defect [3]. We happened to encounter PDA in the third oldest patient aged 88 years. A literature search revealed that she is the oldest patient to be diagnosed with PDA by transesophageal echocardiography.

Case Report

The patient was an 88-year-old woman who presented with a chief complaint of dyspnea at rest. Physical findings on admission were: blood pressure 134/61 mmHg, pulse 68 bpm (regular), and oxygen saturation measured by pulse oximeter 99% (on 1L O₂), with a continuous murmur (Levine II/VI) and wet rales upon chest auscultation.

Chest radiogram (Figure 1) revealed cardiomegaly (cardio thoracic ratio 74%), dilation of the pulmonary artery, pulmonary congestion and pleural effusion. On electrocardiogram (Figure 2), heart rate was 67 bpm in normal sinus rhythm with a high voltage and slight STT changes. N-terminal pro-brain natriuretic peptide was 30850 pg/mL.

Transesophageal echocardiography revealed the left ventricular ejection fraction 27%, the dilation of the left ventricle and the left atrium and pulmonary hypertension (67 mmHg). Moreover, shunt flow was noted from the descending aorta to the pulmonary artery (Figure 3), and the Qp/Qs was 1.3. Contrast-enhanced X-ray computed tomogram also showed a shunt flow (arrow) from the descending aorta to the pulmonary artery (Figure 4). Treatment was started intravenously with 20 mg of furosemide and 0.1 µg/kg/min of carperitide.

By day 7, dyspnea had resolved, and pleural effusion had dissipated. On day 15, she discharged. However, she later passed away at home.



Figure 1: Chest radiogram on admission.

Discussion

Mortality rates in PDA are high in patients less than 1 year of age. After the first year, symptoms often do not appear until the patient is 20 years old and mortality rates remain low at 0.5% per year. After age 20, patients with PDA that includes a large right-left shunt may develop pulmonary hypertension or advanced heart failure and 20% will die by age 30, while 60% will die by age 60 [3]. After the age of 10, patients with PDA are susceptible to infectious endocarditis and prevalence in those under 50 years of age is 0.45% per year [4].

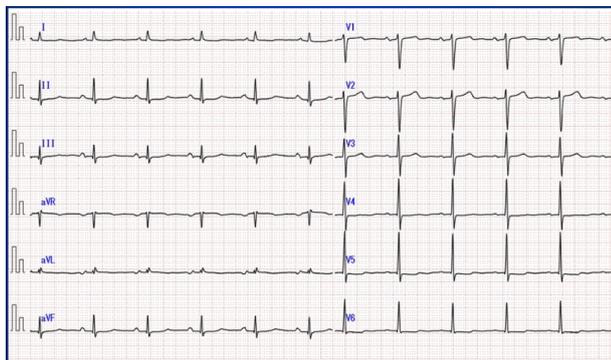


Figure 2: Electrocardiogram on admission.

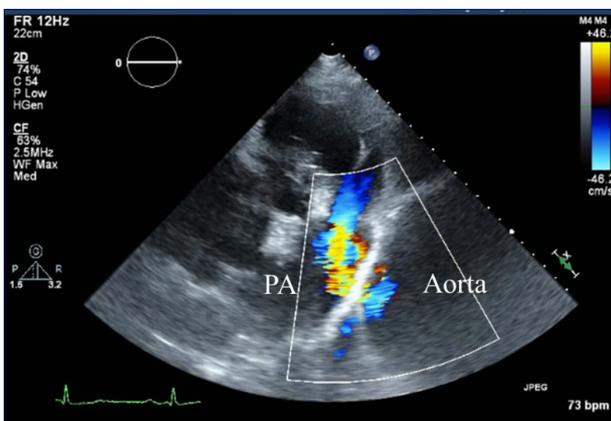


Figure 3: Transesophageal echocardiogram revealed the shunt flow from the descending aorta to the pulmonary artery. PA: pulmonary artery.

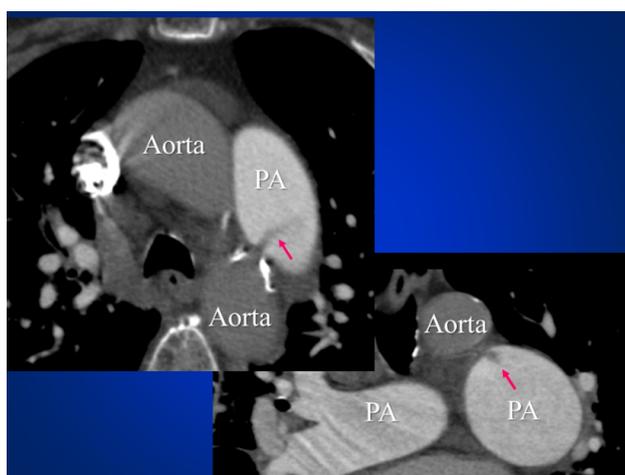


Figure 4: X-ray computed tomogram revealed the shunt flow (arrow head) from the descending aorta to the pulmonary artery. PA: pulmonary artery.

For these reasons, it is considered rare to see patients with PDA over 60 years of age. In our patient, the Qp/Qs was relatively low at 1.3, so the stress on the pulmonary vasculature was relatively mild and this may account for this patient's survival until 88.

The most common symptoms in adult PDA are shortness of breath upon exertion and respiratory distress. Other symptoms include palpitations, chest pain, fainting, repeated respiratory infections, and sudden death [3,5-8]. Our patient had no history of infectious endocarditis complicated by pneumonia, and this may have helped her to attain this age. Published papers report that approximately 24% [6] or 47% [8] of PDA patients suffer from complications such as atrial fibrillation (AF) after age 50, while 62% of those over 60 years develop AF. This would impede cardiac function increasing the risk of cerebral infarction [9]. Our patient did not have AF complications, and this may have contributed to her long life.

If PDA is discovered in neonates and children, surgery is indicated regardless of size [10]. However, if pulmonary vasculature remains unchanged at age 30, it is unlikely to progress to pulmonary hypertension, and this would reduce the need for surgery [3]. Adult PDA with cardiomegaly has a poor prognosis and some reports state that surgery should be implemented in such cases [11]. To prevent PDA complications such as infectious endocarditis, heart failure, and arrhythmias, reports recommend early surgical intervention [8].

Heart murmurs in this patient included slightly less prominent Levine II/VI continuous murmur, and this may account for why PDA was not diagnosed until that time. In a study of 50 patients over 40 years of age with congenital heart disease, atrial septal defect was noted in 25 patients (40-78 years), PDA in 12 patients (40-61 years), pulmonary valve stenosis in 6 patients (46-70 years), ventricular septal defect in 6 patients (40-57 years) and tetralogy of Fallot in 1 case (44 years) [11,12]

In Japan, the most common congenital heart disease in adults is atrial septal defect [13]. The oldest patient reported with congenital heart disease involving an atrial septal defect was 94 and presented with complications of AF [14]. The oldest PDA has been found in a 92-year-old woman [1] and the second oldest patient was a 90-year-old who was first diagnosed at autopsy [2]. Congenital pulmonary valve stenosis was noted in a 98-year-old woman [15], corrected transposition of great vessels in an 84-year-old woman [16], Ebstein anomaly in an 85-year-old man [17] and tetralogy of Fallot in an 86-year-old man [18]. Our 88-year-old woman with PDA is considered to be so old patient among congenital heart disease.

Conclusion

Based on a search of the literature, our case in an 88-year-old patient is the third oldest reported case of PDA and the oldest patient to be diagnosed with PDA by transesophageal echocardiography.

Disclosure

The authors have no conflicts of interest to declare. Informed consent for publication of this case was obtained from the family of the patient.

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