Case Report

Multiple Patent Ductus Arteriosus in an Adult: A Case Report

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Abstract:

Background: Patent ductus arteriosus (PDA) is one of the most common congenital heart defects. It is usually diagnosed and treated soon after birth with only a few appearing in adults. Here we present a case of PDA with calcifications diagnosed at the age of 46 years. Cardiological experts suspected multiple PDAs in this patient which can be the only case to have appeared since we did not find any in the existing literature.

Case Presentation: A 50-years-old female presented with shortness of breath and palpitations since one month. Symptoms first started in 2002 and PDA was diagnosed in 2014. Family history is positive for cardiovascular diseases. Echocardiography done in our setup showed PDA with low pressure along with left ventricular dilation and reduced ejection fraction. Electrocardiogram showed atrial fibrillation. She went for transcatheter closure of PDA but was abandoned due to calcifications and multiple PDAs. She was then discharged on medications and called for follow-up for referral to surgical department but the patient refused to have any further intervention.

Conclusion: This occurrence of PDA at this stage of life shows the lack of resources in various parts of our developing country. All required investigations should be done at their appropriate time according to signs and symptoms so that each case is managed appropriately.

Keywords: patent ductus arteriosus, adult, multiple PDA, palpitation, congenital heart disease, dyspnea

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Introduction

Patent ductus arteriosus (PDA) is one of the most common congenital abnormalities and the frequency is 5-10% of all those involving the heart. In a full-term infant, this arterial duct normally closes within 24-48 hours of birth and is considered abnormal when patent after three months (1,2). PDA is usually diagnosed immediately after birth followed by an appropriate transcatheter, surgical, or percutaneous correction, so its occurrence in adults is rare. In adults, there is a 1.8% mortality rate of untreated cases of PDA, with only a few surviving over 50 years (1,3,4).

Here we present a case of PDA with calcifications diagnosed at the age of 46 years. Cardiological experts suspected multiple PDAs in this patient which can be the only case to have appeared since we did not find any in the existing literature.

Case Presentation:

50 years old married female, resident of district Badin, Sindh, Pakistan, with a known case of Patent Ductus Arteriosus (PDA) (diagnosed in 2014), was admitted through the Emergency department on 6th October 2018 with complaints of shortness of breath New York Heart Association functional class II-III without angina, and palpitation since one month (5).

According to her son, she was in a usual state of health when in 2002, she started complaining of feeling short of breath on exertion, palpitation, on and off fever (relieved by paracetamol), and vertigo. In 2014, she had echocardiography where she was diagnosed with patent ductus arteriosus (PDA). The family used to take her to the local clinics and with some undocumented medications, there was some relief. In 2017, she came to our department where based on the history and examination, Left heart catheterization was done showing normal coronaries. Her son had the same problem which was well managed at the age of four years. The rest of the past medical, surgical, and family history is nonsignificant.

On Cardiovascular examination, continuous holosystolic murmur was heard (best at the left upper parasternal area).

Electrocardiography (ECG) was done (figures not available) that showed atrial fibrillation with a fast ventricular response and a heart rate of 98/min. Echocardiography done on 17-10-2018 showed severely dilated left atrium with a volume index of 62 mL/m2 (reference range, 16-28 mL/m2), dilated left ventricular cavity with a diastolic diameter of 6.8 cm (reference range, 3.9- 5.3 cm), and moderate generalized systolic dysfunction with an ejection fraction of 35% (reference range, >55%). There was normal right ventricular size and function with a tricuspid annular plane systolic excursion of 1.9 cm (reference range, 1.5-2.0 cm) and mild to moderate secondary mitral regurgitation. PDA was seen with a left to right shunt and continuous flow into the main pulmonary artery on color and spectral Doppler. Peak PDA velocity was 4.2 m/s, and end-diastolic velocity was 1.9 m/s suggesting low pressure, while the ductal size was 0.6 cm (Figure 1). Patient baseline laboratory tests including complete blood profile, liver, and kidney function tests were all normal. Viral markers and Human immunodeficiency tests were non-reactive.

In the ward, she was kept on tablet Merol (50 mg twice daily), intravenous Lasix (40 mg thrice daily), intravenous Risek (40 mg once daily), tablet Marevan (7.5 mg once daily), tablet Ivatab 5 mg (half tablet twice daily), tablet Digoxin 0.25 mg once daily and tablet Aldactone (20 mg once daily). The patient went for transcatheter PDA closure but the procedure was abandoned due to calcifications and multiple PDAs. Angiography done at that time can be seen in figure 2. Later on, the case was discussed by the team of senior heart surgeons, radiologists, and interventional cardiologists and they confirmed that this is a case of multiple PDAs along with calcifications and had to be closed by open surgery.

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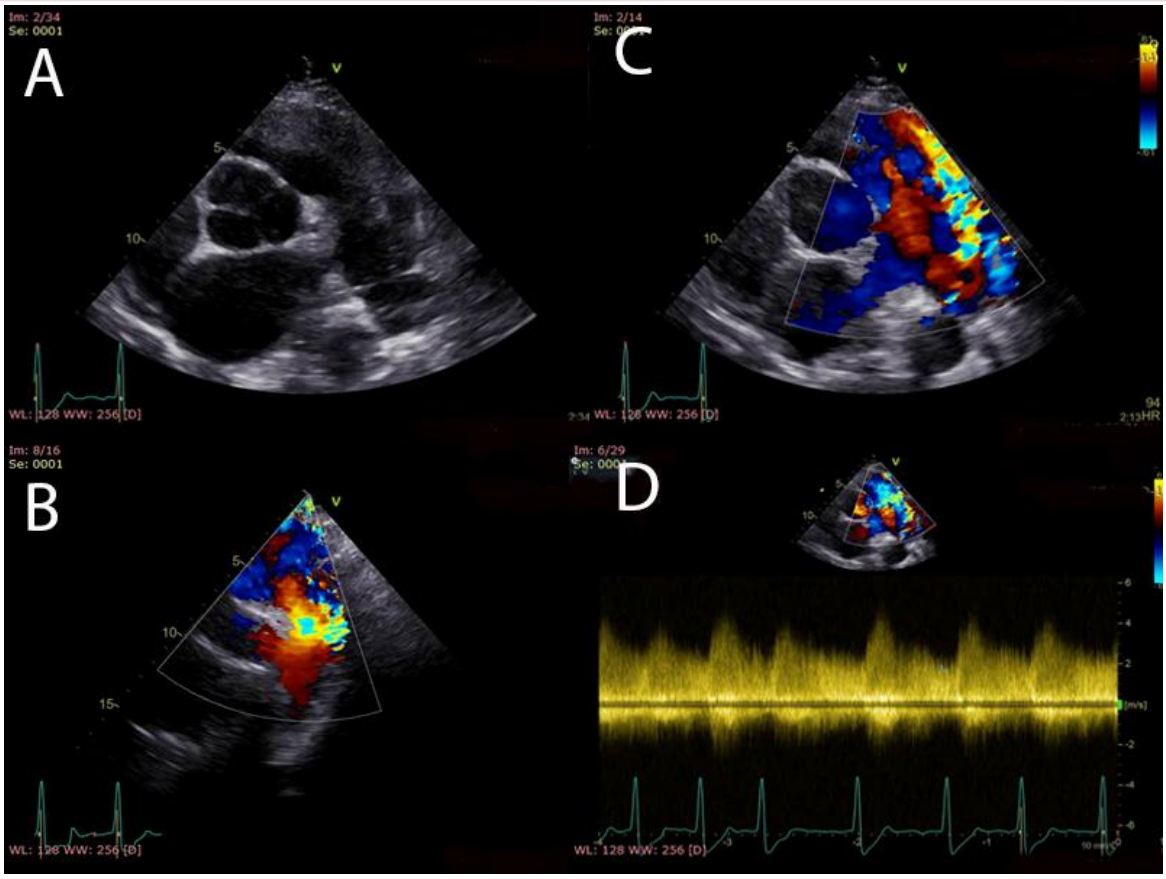

Figure 1: Transthoracic echocardiography of patient showing patent ductus arteriosus with (A) left parasternal view short axis at aortic level, (B) suprasternal view with color doppler, (C) left parasternal view short axis at aortic level with color Doppler, (D) parasternal view short axis at aortic level with color doppler above and continuous wave Doppler

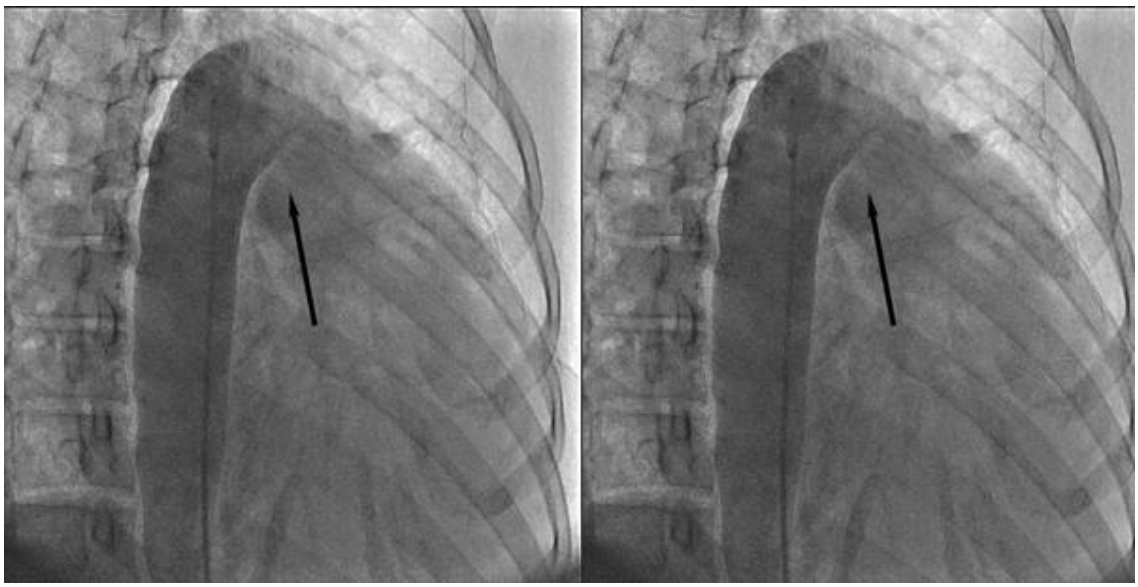

Figure 2: Angiography images with right anterior oblique views

Computed tomography (CT) angiography was planned. After the symptomatic relief, the patient was discharged on 23-10-2018 with the same treatment given in the hospital and asked for follow-up with a CT angiography report for PDA ligation. Later, the patient followed-up with the cardiac surgery department but refused to have any intervention since according to the patient and her family, she was not having any symptoms unless on strenuous activity and so

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the patient was advised for complete rest along with some symptomatic treatment.

Informed consent was obtained from the patient at the time of admission both for the procedure and the possible publication after explaining all the management steps. She was guided throughout the management as much as needed.

Discussion:

The clinical presentation of PDA in an adult ranges from being asymptomatic, diagnosed incidentally, to severe manifestations like those of congestive heart failure, pulmonary artery hypertension, Eisenmenger's syndrome, recurrent pneumonia, endocarditis, or atrial fibrillation. Patients most commonly present with dyspnea and palpitations. Dyspnea/breathlessness generally is very common in old age patients and can be secondary to many cardiovascular and respiratory disorders (1,6-9). The frequency of PDA is more in females (1). In this case report, the report we had a 50 years old female, diagnosed with PDA four years back now presenting with shortness of breath and palpitations. She also had atrial fibrillation on ECG. She did not have any comorbidities although she was short of breath throughout.

Systolic murmur and the echocardiographic signs are not specific for PDA, but the retrograde flow in the main pulmonary artery gives a strong suspicion and the definitive diagnosis can only be made on CT angiography (6). Same was found in this case with a left to right shunt and continuous flow into the main pulmonary artery. The patient was scheduled for CT angiography but she denied.

PDA is rarely diagnosed in adults, and with the appearance of calcification with increasing age, the diagnosis becomes more difficult (6,10). In this patient symptoms first started in 2002, while the echocardiographic diagnosis was made in 2014. This late diagnosis can be attributed to a lack of awareness, resources, and poor access to good cardiac setups.

PDA can be managed by a transcatheter closure and is a safe and effective method in adults. Moreover, it can also be managed by a surgical or percutaneous method. Surgical closure is considered the best approach for PDA since 1939, but in adults especially after the age of 60, it is controversial due to calcifications, aneurysms, and other cardiac comorbidities. Various studies have shown a good efficacy of non-surgical treatment in PDA cases without any comorbidities (11-16). This might be the reason why our patient was doing well without opting for any surgical intervention when the transcatheter approach was abandoned.

While reviewing the literature we did not find any case with multiple PDAs which was suspected by the team of experts in this case. Unfortunately, we were unable to confirm this suspicion since the patient did not get her CT angiography done.

Conclusion:

The occurrence of PDA at this stage of life shows the lack of resources in various parts of our developing country. All the screening and confirmatory investigations should be done at their appropriate time according to signs and symptoms so that each case is managed appropriately.

ABBREVIATIONS:

PDA: Patent Ductus Arteriosus

CT: Compute tomography

ECG: Electrocardiography

DECLARATIONS

Ethics Approval and Consent to Participate: Informed consent to participate was taken from the patient and ethical approval was acquired from the department head.

Consent for Publication: Written informed consent to publish the manuscript with patient details was taken from the patient in the local language. It can be submitted to the editors/reviewers upon request.

Availability of Data and Material: All the available data is presented

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Authors' Contributions: LR, UY, WA, HK, and FUH analyzed and interpreted the patient data regarding this cardiovascular disease. LR and UY performed the physical and systemic examination of the patient and was a major contributor in writing the manuscript. All authors read and approved the final manuscript

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