

**Fig. 1** (a) Fetal ultrasound examination via the M-mode method: 2:1 conduction at the atrium 434/min, ventricle 224/min. Arrow, atrial and ventricular contractions. (b) sixty minutes after birth: heart rate: 203 beats/min, ectopic P wave is recognized immediately after the QRS wave with rhythm adjustment. (c) Ninety minutes after birth (immediately after electrical defibrillation): heart rate: 127 beats/min, and three types of P waves are recognized with an irregular rhythm. (d) forty hours after birth (immediately after adenosine triphosphate administration): heart rate: 200 beats/min, arrhythmia, three types of P waves are recognized.

### Author contribution

M.K. conducted the study and drafted the manuscript; T.Y., S.N., S.I., and T.T. gave conceptual advice. All authors have read and approved the final manuscript.

### References

1 Page RL, Joglar JA, Caldwell MA *et al.* 2015 ACC/AHA/HRS Guideline for the Management of Adult Patients with Supraventricular Tachycardia: A Report of the American College of Cardiology/American Heart Association Task Force

on Clinical Practice Guidelines and the Heart Rhythm Society. *J. Am. Coll. Cardiol.* 2016; **67**: e27–115.

2 Bradley DJ, Fischbach PS, Law IH, Serwer GA, Dick M 2nd. The clinical course of multifocal atrial tachycardia in infants and children. *J. Am. Coll. Cardiol.* 2001; **38**: 401–8.

3 Baek SM, Chung H, Song MK *et al.* The complexity of pediatric multifocal atrial tachycardia and its prognostic factors. Korean. *Circ. J.* 2018; **48**(2): 148–58.

4 Hsieh MY, Lee PC, Hwang B, Meng CC. Multifocal atrial tachycardia in 2 children. *J. Chin. Med. Assoc.* 2006; **69**: 439–43.

## Isolated origin of one-branch pulmonary artery from aorta mimics transient tachypnea of the newborn

Hafize Otcu Temur,<sup>1</sup> Can Yilmaz Yozgat,<sup>2</sup> Bilge Tanyeri Bayraktar,<sup>3</sup> Irmak Tahaoglu<sup>4</sup> and Yilmaz Yozgat<sup>5</sup>

Departments of <sup>1</sup>Radiology, <sup>3</sup>Neonatology, <sup>4</sup>Pediatrics, <sup>5</sup>Pediatric Cardiology and <sup>2</sup>Faculty of Medicine, Bezmialem Vakif University, Istanbul, Turkey

**Key words** newborn respiratory distress, one-branch pulmonary artery from aorta, transient tachypnea of the newborn.

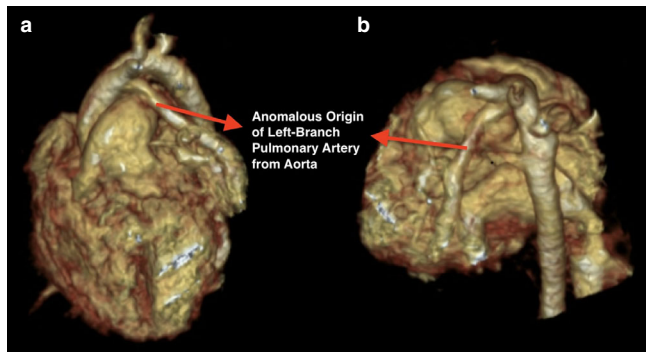
A 15-day-old neonate was admitted to our neonatal intensive care unit (NICU) with respiratory distress. On physical examination, the respiration rate was 54/min (tachypnea), pulse rate

144 beats/min, and blood pressure 62/42 mmHg. The infant had mild cyanosis and a grade 2/6 systolic ejection murmur, which was best heard from the left upper sternal border. A blood test revealed an average C-reactive protein level (0.79 mg/L). Chest X-ray showed an increment of pulmonary vascularity in the fields of the right lung. The patient was diagnosed with transient tachypnea. Low-flow oxygen therapy was initiated immediately and arterial oxygen saturation was 93–95% in room air. On day 3 of NICU admission, there was no significant improvement in the tachypnea and oxygen addiction of the patient, therefore,

Correspondence: Yilmaz Yozgat, MBBS MD, Division of Pediatric Cardiology, Department of Pediatrics, Adnan Menderes Bulvarı, Vatan Caddesi, Bezmialem Vakif University, 34093, Istanbul, Turkey. Email: yozgatyilmaz@yahoo.com

Received 11 October 2019; revised 26 January 2020; accepted 20 February 2020.

doi: 10.1111/ped.14207



**Fig. 1** (a, b) Computed tomography angiography revealing the right pulmonary artery (PA) arising from the dilated main PA with the proximal interruption of the PA and the left patent ductus arteriosus originating from the proximal of brachiocephalic artery and connecting to the large pulmonary artery.

pediatric cardiology and pediatric pulmonology teams were consulted. Electrocardiogram (ECG) revealed normal sinus rhythm, signs of right axis deviation, and right ventricular hypertrophy. Transthoracic echocardiography (TTE) revealed mild left atrial and ventricular dilation and normal left ventricular systolic function. Another result of the TTE was the detection of tricuspid valve insufficiency (pulmonary artery [PA] pressure 50 mmHg). The patient had the right aortic arch, but TTE could not visualize the left pulmonary artery (LPA), so our team decided to perform computed tomography angiography (CTA) of the thoracic aorta to evaluate the patient's PAs and aortic arch. CTA revealed the right PA arising from the dilated main PA, with the proximal interruption of the PA and the left patent ductus arteriosus (PDA) originating from the proximal of brachiocephalic artery and connecting to the LPA (Fig. 1a and b). This type of anomaly is described as proximal interruption of the LPA, associated with right aortic arch and left PDA.<sup>1</sup>

As the patient was only 25-days-old when the operation was carried out, our team decided there would be no irreparable alteration in the pulmonary artery, so cardiac catheterization was not necessary. The patient's condition was discussed by a team composed of two neonatologists, a pediatric cardiologist, and a pediatric surgeon. Their final decision was to perform cardiac surgery. The patient's young age was a significant advantage in obtaining the maximum benefit from cardiac surgery. The patient was operated on day 10 of admission to the NICU. Surgery was performed to separate the LPA from the aorta and end-to-side anastomosis of the left and main PAs. The patient was extubated on postoperative day 3. On day 30 of NICU admission, the patient was discharged from the hospital because of the significant improvement in his respiratory problems.

Respiratory distress in the newborn constitutes a grave diagnostic and management challenge. The most prevalent cause of the condition is transient tachypnea of the newborn (TTN). Congenital heart defects, airway malformations, and inborn errors of metabolism are a few of the common

etiologies.<sup>2</sup> Isolated anomalous origin of the one-branch pulmonary artery from the aorta (AOPA) is a rare congenital anomaly.<sup>3</sup> Because of the direct aorta-pulmonary communication, the condition puts patients at risk of rapid progression of pulmonary hypertension. A clinical manifestation of AOPA in neonates is tachypnea due to the existence of persistent pulmonary hypertension and delayed normalization of pulmonary pressure. Pulmonary hypertension is the most prevalent cause of death in neonates with AOPA and early surgical intervention is the recommended treatment to hinder the development of irreversible pulmonary vascular disease.

Only a few cases have been reported in the literature about diagnosing and possible treatment options for left AOPA. In this case, our team performed surgery immediately and a month later, the neonate's pulmonary pressure returned to its normal levels. Some reports in the literature, have suggested that the abnormality should be kept in mind during echocardiographic examination of neonates who may be having congestive heart failure and unexplained pulmonary hypertension without structural intracardiac defects.<sup>4</sup> If tachypneic respiration is prolonged and echocardiographic findings of persistent pulmonary hypertension of the newborn or delayed pulmonary arterial pressure transition are detected in neonates who are considered to have TTN, the presence of AOPA should be determined with three-dimensional CTA.

Permission was granted by the parents of the patient to publish the case report. Institutional review board approval was not required for this case report.

## Disclosure

The authors declare no conflicts of interest.

## Author contributions

C.Y.Y. wrote the manuscript; H.O.T, I.T, Y.Y. and B.B. gave conceptual advice. All authors read and approved the final manuscript.

## References

- 1 Apostolopoulou SC, Kelekis NL, Bruntzos EN *et al*. "Absent" pulmonary artery in one adult and five pediatric patients: imaging, embryology, and therapeutic implications. *Am. J. Roentgenol.* 2002; **179**: 1253–60.
- 2 Gallacher DJ, Hart K, Kotecha S. Common respiratory conditions of the newborn. *Breathe (Sheff)*. 2016; **12**: 30–42.
- 3 Fong LV, Anderson RH, Siewers RD, Trento A, Park SC. Anomalous origin of one pulmonary artery from the ascending aorta: a review of echocardiographic, catheter, and morphological features. *Br. Heart J.* 1989; **62**: 389–95.
- 4 Amir G, Frenkel G, Bruckheimer E *et al*. Anomalous origin of the pulmonary artery from the aorta: early diagnosis and repair leading to immediate physiological correction. *Cardiol. Young* 2010; **20**: 654.