

Kinking of the Aorta in the Third-trimester Ultrasound Scan

Matilde Matos Martins^{1*}, Susana Saraiva¹, Sara Cunha¹, Cátia Rasteiro^{1,2}, António Marinho Da Silva³, Cristina Costa¹

¹Department of Obstetrics and Gynecology, Entre O Douro E Vouga Hospital Center, Santa Maria da Feira, Portugal, ²Health Science Faculty, Beira Interior University, Covilhã, Portugal, ³Department of Pediatric Cardiology, Entre O Douro E Vouga Hospital Center, Santa Maria da Feira, Portugal

SECTION 1 – QUIZ

Case

A 40-year-old healthy woman, gravida 2, para 1 (vaginal delivery 7 years ago), was referred to our obstetrics department for ultrasound surveillance due to advanced maternal age. The first pregnancy was uneventful. Family history was unremarkable.

The first ultrasound scan was normal, but since it was performed after the ideal timing (at 16 weeks), aneuploidy screening was carried out with cell-free fetal DNA scanning, which presented low risk.

The second-trimester ultrasound scan at 20 weeks and 1 day of gestation, showed a live fetus with no apparent fetal abnormalities, nevertheless, because the cardiac examination was difficult, fetal echocardiography was performed at 21 weeks, which showed to be normal.

The patient was diagnosed with gestational diabetes at 26 weeks, and glycemic control was achieved with diet.

At 28 weeks, a third-trimester ultrasound scan was carried out, showing a live fetus in a cephalic presentation with an estimated fetal weight of 1392 g (90th percentile) and normal anatomy for the gestational age.

The third-trimester ultrasound scan was repeated at 34 weeks and 4 days of gestation, showing a live fetus in a cephalic presentation with an estimated fetal weight of 2480 g (50th percentile). Throughout the examination, an irregularity of the cardiac rhythm was detected (suggestive of cardiac extrasystoles). During cardiac assessment, an abnormal course of the aorta was identified, namely a prominent kinking in the proximal descending aorta with no significant stenosis nor frank aneurysm formation [Figure 1].

The fetal echocardiography at 35 weeks of gestation showed: situs solitus and levocardia with normal cardiac axis and normal

atrioventricular concordance. The four-chamber view revealed a left ventricle/right ventricle proportion of 1.46 [Figure 2a]. The ventricular outflow tract views, three-vessel view, and three-vessel and trachea views were normal. The sagittal arch view revealed an elongation of the distal aortic arch, a focal kinking at the proximal descending aorta, and an absence of significant stenosis or enlarged collateral arteries [Figure 2b]. In addition, frequent supraventricular extrasystoles were visualized. The maternal assessment was unremarkable (no cardiac or medication history, and normal laboratory tests, including normal thyroid-stimulating hormone).

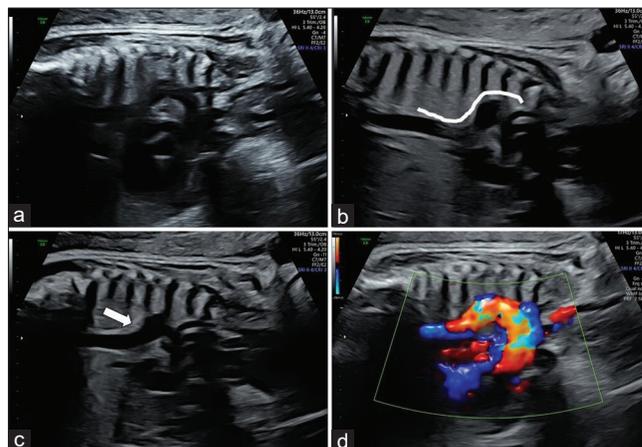


Figure 1: (a-c) A two-dimensional echocardiography sagittal view of the aortic arch at 34 weeks of gestation, showing an abnormal course of the aorta (white line) with a prominent and focal kinking (arrow) without frank aneurysm formation in the proximal descending aorta; (d) A sagittal view of the aortic arch with color-Doppler revealing a slight aliasing effect in the kinking/bulking area

Address for correspondence: Dr. Matilde Matos Martins, Casa da Vila da Feira Street, Number 34, 3rd Left, 4520 293, Santa Maria da Feira, Aveiro, Portugal.
E-mail: matildemartinsm@gmail.com

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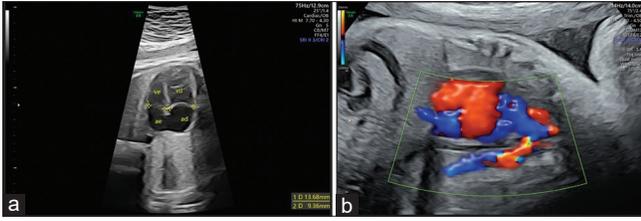


Figure 2: (a) A two-dimensional echocardiography four-chamber view at 35 weeks, showing a left ventricle/right ventricle proportion of 1.46 (13.68/9.36) – normal value $< 1.5^{(1)}$; (b) A sagittal arch view with color-Doppler, revealing a focal kinking without frank aneurysm formation in the proximal descending aorta with no significant stenosis or enlarged collateral arteries and a slight aliasing effect across the lesion, and with no major hemodynamic abnormalities

A healthy female newborn was delivered at 40 weeks. At 1 day of life, a transthoracic echocardiogram was performed, confirming the focal kinking described with no stenosis or collateral arteries [Figure 3].

WHAT IS THE DIAGNOSIS?

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the forms, the patient has given her consent for her images and other clinical information to be

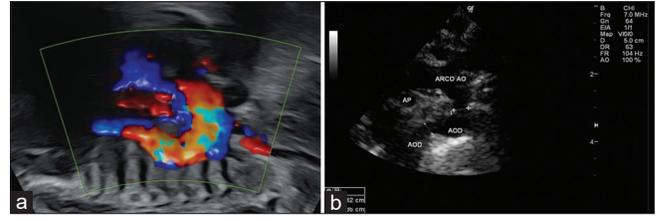


Figure 3: Comparison between prenatal and postnatal findings: a two-dimensional echocardiography sagittal arch view at 35 weeks of gestation (a) and at day 1 of life (b) showing the abnormal course of the aorta with a prominent and focal kinking in the proximal descending aorta, without aortic stenosis. (ARCO AO: Aortic Arch; AOD: Descending Aorta; AP: Pulmonary artery)

reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCE

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