

Letters to the Editor

COVID-19 and Congenital Abnormalities in a Pregnant Woman

To the Editor: The Letter to the Editor by Mr. Dalla and colleagues presented a case of tetralogy of Fallot in a woman who contracted COVID-19 at 18 weeks and four days of gestation.¹ The authors implied that COVID-19 caused the heart defect; however, because fetal organs are fully developed by 12 weeks, I doubt any infection at 18 weeks' gestation would have caused this major cardiac defect. The authors also mentioned that the patient had a normal fetal heart morphology on ultrasonography throughout her pregnancy, as late as 38 weeks' gestation. Therefore, I would question the accuracy of the ultrasound results instead of implying a viral cause of this problem.

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Author disclosure: No relevant financial relationships.

Reference

1. Dalla S, Rausch M, Kellerman R. Case report: second-trimester maternal COVID-19 infection and tetralogy of Fallot [Letter]. *Am Fam Physician*. 2021;104(4):331.

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This series is coordinated by Kenny Lin, MD, MPH, deputy editor.

In Reply: We appreciate Dr. Swindle's thoughtful comments. We had similar thoughts on the pathophysiology because embryologically most organs are formed by 12 weeks, and the heart is mostly developed as early as eight weeks. The exact biologic cause of tetralogy of Fallot is unknown. There is some literature suggesting that genetics and flow remodeling play a role.¹ Research also shows that cardiac muscle cells may not fully organize until week 20.² We acknowledged in our letter that this single case is not enough evidence to claim that COVID-19 led to this congenital abnormality. Our hope was to convey a sense of vigilance when treating a pregnant woman who has had COVID-19 early in pregnancy because there is a sufficient precedent of viral causes of congenital cardiac and other anatomic defects. We agree that prenatal ultrasonography did not detect the cardiac abnormality, which is unusual.³

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1. Dyer LA, Rugonyi S. Fetal blood flow and genetic mutations in conotruncal congenital heart disease. *J Cardiovasc Dev Dis*. 2021;8(8):90.
2. Pervolaraki E, Anderson RA, Benson AP, et al. Antenatal architecture and activity of the human heart. *Interface Focus*. 2013;3(2):20120065.
3. Arya B, Levasseur SM, Woldu K, et al. Fetal echocardiographic measurements and the need for neonatal surgical intervention in tetralogy of Fallot. *Pediatr Cardiol*. 2014;35(5):810-816. ■