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Case Report
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Endocarditis during Pregnancy in a Woman with Interventricular Septum Defect

Candela P, Ajello L, Leone S, Castellano F, Valerio MCE, Camarda P, Mancuso L and Rebulla E*

Department of Cardiology, Casa di Cura Candela, Italy

Background

Infective endocarditis is a rare but life-threatening infection during pregnancy and in the postpartum period. For this reason, a high index of suspicion leading to early diagnosis and institution of appropriate management is required [1].

In the current era, risk factors are changing, with a marked decrease in rheumatic heart disease, as an underlying cardiac risk factor, and a concomitant increase in congenital heart disease and intravenous drug use.

The presence of Ventricular Septum Defect (VSD) is one of the predisposing factors; in fact, VSD, according to several registries, is the most frequent congenital heart disease in pregnant women [2] (Figure 1). Over time, maternal and fetal outcomes have improved and this is likely related to advances in maternal-fetal monitoring, better surgical techniques, and availability of nontoxic and effective antimicrobial agents.

Staphylococcus, *Streptococcus*, and *Enterococcus* species account for between 80% and 90% of all cases of IE worldwide [3]. In particular, *S. gordonii* is a rare cause of IE that has been sparsely reported in the literature. *S. gordonii* are Gram-positive, alpha-hemolytic chains of cocci that play an important role in the alkalization of the oral cavity and protective biofilm production [4]. Once in the blood stream, *S. gordonii* appear to have the virulence factors that are pathogenic in the development of IE. The cell wall of *S. gordonii* contains a serine-rich glycoprotein, GspB, which mediates binding to human platelets [4]. After adherence to the platelet, the combination has the potential to attach to the fibronectin-rich extracellular matrix of the cardiac valves and subsequently form valvular vegetations.

Case Presentation

A 40-year-old patient was admitted with fever at 18 weeks' gestation in her fourth pregnancy.

Medical history included a small Ventricular Septal Defect (VSD) which was diagnosed in childhood and never required surgical intervention. The patient underwent regular follow up: Her last cardiology assessment in 2019 was normal.

One month prior to admission (March 2020) she suffered from pain in the upper right dental arch and fever; she was treated with amoxicillin for 5 days (April 2nd to 7th) with benefit. Four days after stopping the therapy, fever reappeared and inflammatory markers increased; a one-week antibiotic cycle with amoxicillin and ceftriaxone was administered; but again, a recrudescence of fever occurred after the suspension of therapy.

The following examinations were performed:

1. Abdomen ultrasound (April 8th): No significant alterations.

2. IgM and IgG dosage for toxoplasma (14.4): Negative

3. Coproculture (20.4): Negative.

On April 20th, a dental granuloma was removed. Few days after, the patient had recurrence of fever.

Laboratory test were performed (Table 1) and blood cultures were obtained, testing positive for *Streptococcus gordonii*. The patient was finally admitted to our department. Body mass index was 19 at admission.

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Correspondence:
Pietro Candela, Department of Cardiology, Casa di Cura Candela, Palermo, Italy,
E-mail: pietro.candela@gmail.com

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Table 1: Laboratory investigations.

Investigation	Value	Reference range
Hemoglobin	9.6 g/dL	9.5-15 g/dL
White cell count	10×10^9/L	$5.9\text{-}16.9 \times 10^9$/L
C-reactive protein	123 mg/L	0.4-8.1 mg/L
Arterial blood gas	pH 7.5	7.39-7.45

A blood culture was repeated on day 1, confirming positivity for *S. gordonii* (Figure 2). Transthoracic echocardiography (Figure 3) confirmed the presence of VSD but no evidence of endocardial vegetation was found. According to ESC guidelines, we performed a transesophageal echocardiography. No vegetation was detected but we noted a hypoechogenic thickening near the VSD (Figure 4, 5), probably due to turbulent flow. We think it's very likely that this zone can favor bacterial growth, which was prevented by the presence of rapid flow at this level; however, microlesions created by the turbulent flow itself may have triggered transient bacterial permanence.

The patient was treated with intravenous ceftriaxone 2 g once daily and blood culture, 4 weeks later, were negative.

Obstetric ultrasounds showed no fetal suffering. The patient was dismissed in good conditions.

Discussion

We report the case of a 40-year-old patient who presented with fever at 18 weeks and 3 days of gestation in her fourth pregnancy. A diagnosis of infective endocarditis was made. The patient described developed *Streptococcus gordonii* infective endocarditis, which is a rare but aggressive causative organism in infective endocarditis. Infective endocarditis in pregnancy is a rare but serious condition with significant fetal and maternal morbidity and mortality [5]. Early diagnosis with a multidisciplinary team approach is essential to improve outcomes.

Several studies showed that, even today, maternal and fetal mortality is higher than 10% [6]. For this reason, in our case, given the positive blood culture even in the absence of a clear endocarditic vegetation (see echocardiogram findings), we prescribed targeted antibiotic therapy. The patient was dismissed 4 weeks after completion of antibiotic treatment, with negative blood culture. During the pregnancy, the baby showed a delay in surfactant development requiring corticosteroid therapy; shortly after the delivery, she developed a pneumonia with respiratory failure requiring prolonged stay in neonatal ICU. Happily, she totally recovered after 14 days.

ZAHARA Study

Congenital heart disease	N	Cardiac complications			
		AR	HF	CE	EN
Atrial septal defect	188	7	0	2	0
Aortic coarctation	160	2	1	0	1
Ventricular septal defect	148	1	0	1	1
Pulmonary valve stenosis	148	3	1	3	0
Tetralogy of Fallot	124	7	1	1	0
Marfan syndrome	118	1	0	2	0
Atrioventricular septal defects	89	15	3	2	0
Aortic valvar stenosis	81	3	4	0	0
Complete transposition of the great arteries	52	11	4	2	0
Ebstein malformation	22	2	0	1	0
Congenital corr. transposition of great arteries	19	1	2	0	0
Pulmonary atresia	12	3	0	0	0
Pulmonary hypertension or Eisenmenger[a]	4	0	1	0	0
Complex cyanotic heart disease	9	3	2	0	0
Other	128	3	2	3	0
Overall	1302	62	21	17	2

AR = aritimie
HF = scompenso cardiaco
CE = complicazioni CV
EN = endocardite

CONCOR Registry (Belgio)

- Il DIV rappresenta una della più frequenti cardiopatie congenite in gravidanza
- Su 1302 donne in gravidanza con cardiopatie congenite solo 2 hanno sviluppato E.I. e di questa 1 con coartazione aortica e 1 con difetto del setto interventricolare

EHJJ 2010; 31: 2124-32

Figure 1: Predictors of pregnancy complications in women with congenital heart disease.

Esame microscopico

La colorazione diretta delle colonie batteriche con metodica gram ha evidenziato la presenza di batteri gram positivi

Ricerca batteri aerobi
Isolati:

POSITIVA

1 **Streptococcus gordonii**

	1
Ampicillina	<=0.25 S
Cefotaxime	0.25 S
Ceftriaxone	<=0.12 S
Clindamicina	<=0.25 S
Gentamicina	<=64
Penicillina G	<=0.06 S
Teicoplanina	<=0.12 S
Vancomicina	0.5 S

Figure 2: Blood culture.

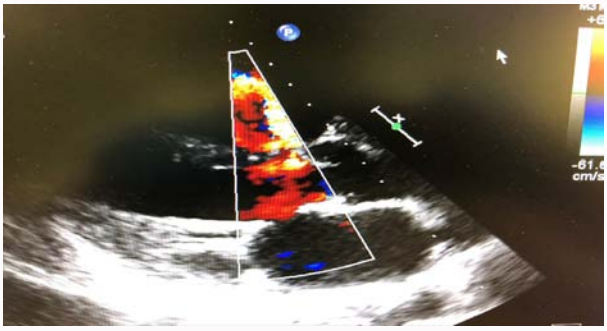

Figure 3: TTE showing the ventricular septum defect.

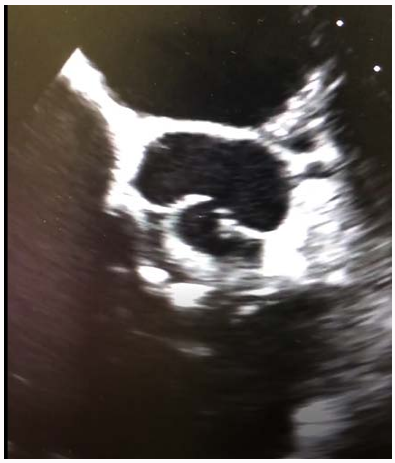

Figure 4: Hypoechogenic thickening near the VSD.

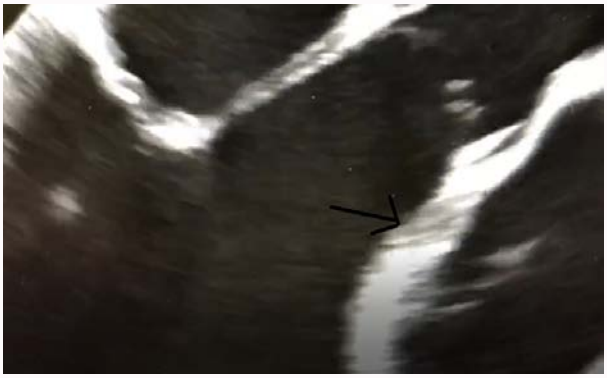

Figure 5: Hypoechogenic thickening near the VSD.

References

1. Kebed KY, Bishu K, Al Adham RI, Baddour LM, Connolly HM, Sohail MR, et al. Pregnancy and postpartum infective endocarditis: A systematic review. Mayo Clin Proc. 2014;89:1143-52.
2. Drenthen W, Boersma E, Balci A, Moons P, Roos-Hesselink JW, Mulder BJM, et al, Predictors of pregnancy complication in women with congenital heart disease. Eur Heart J. 2010;31(17):2124-32.
3. Cahill TJ, Prendergast BD. "Infective endocarditis." Lancet. 2016;387(10021):882-93.
4. Chen PC, Tung YC, Wu PW, Wu LS, Lin YS, Chang CJ, et al., "Dental procedures and the risk of infective endocarditis." Medicine. 2015;94(43):e1826.
5. Yuan SM. Infective endocarditis during pregnancy. J Coll Physicians Surg Pak. 2015;25:134-9.
6. Chapter 19 - Management of Maternal Endocarditis in Pregnancy. In: Heart Disease in Pregnancy. Steer PJ, Gatzoulis MA, editors. Second Chapter: Section 4. Cambridge University Press. 2016. p. 191-8.