A case of an acquired high-degree AV block in a pregnant woman

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Acquired heart block during pregnancy is rare. We describe the case of a 29-year-old pregnant female with fatigue due to an unexplained high-degree AV conduction disorder. She was treated with a dual chamber pacing system. Further pregnancy and delivery were without complications. The sparse literature on this topic is reviewed. (*Neth Heart J* 2008;16:419-21.)

Keywords: AV conduction block, pregnancy, pace-maker

A 29-year-old pregnant female was seen at the Outpatient Department after her general practitioner had taken an ECG because of unusual fatigue and a slow heart rate (figure 1). Her medical history had been unremarkable until now. She had given birth to a healthy girl two years ago following a Caesarean section; a review of the medical charts during that surgical procedure showed that her heart rate was between 70 and 90 beats/min and her blood pressure between 110/55 mmHg and 140/80 mmHg.

At the moment the ECG was taken, her gestation period was 22 weeks. Apart from feeling very tired lately, she had not experienced any dizziness or syncope. She did not have any palpitations, dyspnoea on exertion or chest pain. Physical examination, apart from the pregnancy and low heart rate, was normal. Part of the ECG (figure 1) showed a complete heart block with an escape rhythm of left bundle branch morphology, whereas some QRS complexes are less wide and one of them is related to atrial activity just preceding it. Another ECG shortly after admission (figure 2) showed

a 3:1 atrioventricular block with QRS complexes of incomplete right bundle branch block morphology. Ultrasonography of her heart did not reveal any structural abnormalities. Laboratory investigation was also normal. Borrelia serology was negative. A dual chamber pacing system was inserted with radiation safety precautions for the unborn child. The procedure was uneventful. Following 40 weeks of gestation, she delivered a healthy daughter.

Discussion

The finding of a high-degree AV block in pregnancy is rare. If present, it is usually related to a congenital complete heart block; in fact, 30% of the cases of congenital complete heart block remain undiscovered until adulthood and may therefore present during pregnancy.¹ In our patient, however, a previous pregnancy was unremarkable, with the child delivered by Caesarean section (due to poor progression of labour). Hospital charts recorded normal heart rates and blood pressures, also during the surgical procedure. Thus, in our patient the bradyarrhythmia was most likely due to an acquired atrioventricular block, although progression of pre-existing low-grade or intermittent congenital block can not be completely excluded. Since no data of the patient's heart rate between the previous pregnancy and the current presentation were available, we can not draw definite conclusions regarding a causal relationship between the pregnancy and the conduction disturbance; it is possible that the high-degree AV block became clinically manifest during pregnancy because of altered haemodynamics. Acquired AV conduction blocks can be attributed to fibrosis and sclerosis of the conduction system, to ischaemic heart disease, the use of negative chronotropic and dromotropic drugs, increased vagal tone, valvular disease, cardiomyopathies, congenitally corrected transposition of the great arteries, electrolyte disturbances, autoimmune diseases, systemic diseases such as sarcoidosis or infectious diseases such as Lyme disease.^{2,3} Our patient was not taking any medication. We do not consider ischaemic heart disease very likely given the medical history and absence of angina. Repetitive laboratory examinations were normal, including

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Figure 1. ECG taken by general practitioner because of unusual fatigue during pregnancy showing a complete heart block with an escape rhythm of left bundle branch morphology, although two QRS complexes are less wide with one of them possibly related to the atrial activity preceding it.

Figure 2. ECG taken at our cardiology department showing a 3:1 atrioventricular block with QRS complex of incomplete right bundle branch block morphology.

electrolytes, thyroid-stimulating hormone and Borrelia serology. Transthoracic ultrasonography showed a structurally normal heart, virtually excluding any cardiomyopathy. Transthoracic ultrasonography showed a structurally normal heart, virtually excluding any cardiomyopathy as well as valvular disease and congenitally corrected transposition of the great arteries. There were no signs of autoimmune disorders. Furthermore, rhythm strips of the patient during pacemaker testing eight months after delivery still showed a complete heart block, excluding the

possibility of pregnancy-related transient underlying causes (figure 3). Thus, we were not able to offer an explanation for the conduction disturbance in our patient.

Once high-degree AV block is seen during pregnancy, it is difficult to establish the necessity of implanting a cardiac pacemaker in asymptomatic patients.⁴ Hidaka et al. demonstrated in six asymptomatic patients with complete atrioventricular conduction block and structurally normal hearts that artificial cardiac pacing

Figure 3. Rhythm strip during pacemaker check-up, 8 months after pregnancy, showing an AV sequentially paced rhythm.

was not needed.⁵ However, our patient suffered from unusual fatigue and although there were no signs of syncope, we judged her symptoms to be related to the conduction disturbance and decided to implant a dual chamber pacemaker. Insertion of a pacemaker during pregnancy can be done safely.^{6,7} Following the procedure, our patient felt much better. Both the remaining gestation period and delivery were uneventful. ■

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