Case Report

Reversible Complete Heart Block in a Pregnant Woman Related to Sertraline Treatment

Frederik Cosedis Enevoldsen, MBBS,a Jens Cosedis Nielsen, MD, PhD, DMSca,b and Torsten Bloch Rasmussen, MD, PhD3
a Department of Cardiology, Aarhus University Hospital, Aarhus, Denmark
b Department of Clinical Medicine, Aarhus University Hospital, Aarhus, Denmark

ABSTRACT

Complete heart block (CHB) is a serious condition, usually affecting older patients. We report a case of CHB in a 31-year-old pregnant woman treated with sertraline in whom atrioventricular (AV) conduction normalized after discontinuation of sertraline. Results of subsequent genetic investigations for inherited cardiomyopathy and ion-channel disease and a pharmacogenetic study of sertraline pharmacokinetics were negative. Reversible CHB in this younger pregnant patient was temporally related to sertraline. This case underlines the importance of identifying reversible causes when a young patient presents with AV block with unknown trajectory and prognosis, as well as regular recording of electrocardiograms in pregnant patients on psychotropic medications.

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A 31-year-old woman in her 21st week of pregnancy was admitted to our clinic with the experience of palpitations. Physical examination revealed an irregular, slow heart rhythm (59 beats per minute), and hypotension (99/55 mm Hg). Electrocardiography (ECG) showed complete heart block (59 beats per minute), and hypotension (99/55 mm Hg). Physical examination revealed an irregular, slow heart rhythm (59 beats per minute), and hypotension (99/55 mm Hg). Electrocardiography (ECG) showed complete heart block (Fig. 1B). A transthoracic echocardiogram showed a structurally normal heart. Results of laboratory tests, including leukocyte blood count, C-reactive protein (CRP), thyroid-stimulating hormone (TSH), Lyme titer, and cardiac troponins, were all normal. The patient had no history of cardiac disease and no family history for cardiomyopathy, intracardiac device, or sudden cardiac death. She was treated for obsessive-compulsive disorder, and, 5 months before, citalopram had been replaced by sertraline 50 mg once daily to be continued during pregnancy owing to its more favourable safety profile. The results of the ECG obtained at that time were normal (Fig. 1A).

Because of the young age of the patient and lack of identifiable causes of CHB, no pacemaker was implanted, sertraline treatment was discontinued, and the patient was kept on telemetry. During the following days, a gradual recurrence of AV conduction was observed. On day 3, some impulses were conducted through the AV node. On day 4, the heart rate had increased to 100 beats per minute, and an ECG showed prolonged PR interval with episodes of second-degree Wenckebach type AV block. The PR interval gradually decreased and reached normal values on day 8 (Fig. 1C). Follow-ups with 48-hour Holter monitor recordings conducted 2 weeks, 4 months, and 6 months after sertraline was stopped showed sinus rhythm, normal PR interval, and no AV block. After giving birth, the patient started paroxetine, and the results of the ECG were normal.

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Figure 1. Patient electrocardiogram (ECGs) (25 mm/s). (A) Normal ECG recorded after a few days of sertraline treatment and 6 months before onset of symptoms. (B) ECG recorded 2 days after hospitalization, showing complete heart block with atrioventricular dissociation, heart rate 59. (C) ECG recorded 8 days after cessation of sertraline, showing sinus rhythm and normal PR interval.
Sertraline is well known to prolong QT interval and has other cardiac electrophysiological effects, but, to our knowledge, CHB related to sertraline treatment is a novel finding. Whether the cause of disease was attributable to something peculiar to this patient would require further study. The case makes an example of the importance of identifying reversible causes of AV block, particularly in younger patients with proximal AV nodal block with unknown trajectory and prognosis. In such a situation, permanent pacemaker implantation may be unnecessary and may pose more risk to the patient than benefit.

Discussion

When a young patient presents with CHB, the physician should always consider drugs as potential contributors, especially if recently prescribed and even if this specific adverse effect has not previously been described in the literature. Our patient received a relatively low dose of sertraline, 50 mg daily, and, to our knowledge, this drug has not been associated with CHB. The unusual course of this patient raises a discussion of the possible underlying mechanisms and contributing factors.

Sertraline is a selective serotonin reuptake inhibitor (SSRI). SSRIs have a wide spectrum of inhibitory effects on various cardiac ion channels, which may induce changes of the cardiac action potential duration and the QT interval. Indeed, sertraline concentrations were not obtained, and reinstitution of sertraline treatment after pregnancy was deemed inexpedient in this patient with obsessive-compulsive disorder. Consequently, a definite causal relation between sertraline and CHB observed cannot be established. Maternal CHB in patients with structurally normal hearts has been reported, suggesting that CHB could be solely associated with pregnancy. Still, in the light of the course of disease with recovery of AV conduction during the week after discontinuation of sertraline, there could be a correlation. Our findings emphasize the importance of recording regular ECGs in pregnant patients on SSRIs rather than recommending drug withdrawal (unless arrhythmia is documented), as such intervention could seriously impair maternal mental health.

In summary, we report a case of reversible CHB in a pregnant 31-year-old patient temporally related to sertraline.

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Disclosures

The authors have no conflicts of interest to disclose.

References

1. Witchel HJ, Hancox JC, Nutt DJ. Psychotropic drugs, cardiac arrhythmia, and sudden death. J Clin Psychopharmacol 2003;23:58-77.
2. Patel NH, Golwala H, Stavrakis S, Schechter E. Sertraline-induced ventricular tachycardia. Am J Ther 2013;20:e720-2.
3. Amin M, Lehmann H, Mirmiran J. A double-blind, placebo-controlled finding study with sertraline. Psychopharmacol Bull 1989;25:164-7.
4. DeVane CL, Liston HL, Markowitz JS. Clinical pharmacokinetics of sertraline. Clin Pharmacokinet 2002;41:1247-66.
5. Wang JH, Liu ZQ, Wang W, et al. Pharmacokinetics of sertraline in relation to genetic polymorphism of CYP2C19. Clin Pharmacol Ther 2001;70:42-7.
6. Saiz-Rodriguez M, Belmonte C, Roman M, et al. Effect of polymorphisms on the pharmacokinetics, pharmacodynamics and safety of sertraline in healthy volunteers. Basic Clin Pharmacol Toxicol 2018;122:501-11.
7. Tannif Y, Morado J, Hebert MF. Pregnancy-related pharmacokinetic changes. Clin Pharmacol Ther 2016;100:53-62.
8. Suri V, Keenanasseril A, Aggarwal N, Vijayvergiya R, Chopra S, Rohilla M. Maternal complete heart block in pregnancy: analysis of four cases and review of management. J Obstet Gynaecol Res 2009;35:434-7.