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Brief Report

QT prolongation in the newborn and maternal alcoholism

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Abstract I discuss a newborn whose mother is addicted to alcohol. On the third day of life, the newborn was found to have ventricular tachycardia. After spontaneous termination of the abnormal rhythm, the duration of the corrected QT interval was 0.48 s. During the next days, the duration of the interval normalized, and has now remained stable for 5 years. I conclude that the so-called "alcohol withdrawal syndrome of the newborn" might cause postnatal prolongation of the QT interval.

Keywords: Electrocardiography; corrected QT interval; ventricular tachycardia

The long QT syndrome is a rare disorder, which might present clinically as syncope, seizure, or cardiac arrest, even in childhood.[1] The association between the syndrome and sudden death in infancy has been suspected for almost 20 years.[2] Thus, Schwartz et al.[3] examined electrocardiographic tracings from more than 34,000 neonates, and suggested a strong association between prolongation of the QT interval and sudden death in infancy. As potential underlying pathogenetic mechanisms, this group suggested developmental alterations in cardiac sympathetic innervation, and genetic abnormalities.

There are, of course, a lot of other causes for prolongation of the QT interval. In this report, I focus on the influence of maternal intake of alcohol during pregnancy, and so-called "alcohol withdrawal syndrome in the newborn", which might cause such prolongation. Acute infusion of alcohol is known to prolong the QT interval in patients with coronary arterial disease, as well as in healthy males.[4] On the other hand, others have reported prolongation of the QT interval during the alcohol withdrawal syndrome.[5–7] In this regard, Otero-Anton et al.[6] observed normalization of the QT interval after complete recovery from the symptoms of withdrawal. I discuss a neonate born to an addicted alcoholic, who developed prolongation of the QT interval and ventricular tachycardia in the immediate postnatal period.

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Case report

An electrocardiogram was taken on the third day of life in a boy with the clinical signs of alcohol embryopathy, fitting within the second and third grades identified by Majewski et al.,[8] because of ventricular tachycardia. The mother was well known to be addicted to alcohol. After spontaneous termination of the tachycardia, the QT interval, corrected using Bazett's formula, was 0.48 s. During the following days, the corrected interval became shorter, decreasing to 0.44 s on the fifth day of life, 0.42 s on the eighth, and 0.38 s on the twelfth day. Thereafter, the corrected interval remained normal, and no further arrhythmia occurred. Follow-up has now continued through 5 years without any cardiac symptoms.

Dedicated to my teacher Hermann Loeser.

Comment

The so-called "alcohol withdrawal syndrome" is known to cause prolongation of the QT interval.[5–7] Interestingly, the association of maternal alcohol abuse during pregnancy, and withdrawal syndrome of the newborn, has never previously, as far as I am aware, been thought to be a possible reason for such

prolongation in this age group. My case, nonetheless, shows that this can occur. Anamnesis and typical clinical findings confirmed the alcoholic embryopathy. Prolongation of the QT interval was found after birth, but the interval normalized over the next days, as occurs in adults during recovery from the alcohol withdrawal syndrome.[6] Ventricular tachycardia, a known complication of QT prolongation, also occurred in my patient.

Nothing is known about the duration of cardiac changes in the newborn after maternal alcohol abuse. In my case, the QT interval had normalized after the twelfth day of life, and has now remained normal for several years. This seems comparable with the finding that the interval also normalizes in adults after recovery from alcoholic withdrawal.[6] Co-existence with long QT syndrome seems unlikely in my patient.

Schwartz et al.[2] did not mention alcohol withdrawal as a possible cause for such prolongation of the QT interval in the newborn, probably because it is quite difficult to confirm maternal alcohol abuse, this often being a "hidden" disease, different from nicotine abuse.[9] I suggest, therefore, that my experience shows that excessive exposure to alcohol during pregnancy might cause prolongation of the QT interval during the withdrawal syndrome of the newborn.

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