Case Report

International Journal of Medical Case Report

Doxepin Induced Torsades de Pointes in a Middle-aged Female: A Case Report

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Received : 10 April 2023 Revised :15 May 2023 Accepted:15 June 2023

Abstract

This case report describes a 45-year-old female with no previous cardiac history who developed Torsades de Pointes (TdP) after initiation of doxepin for depression. The patient presented with dizziness and near-syncope, and her ECG showed significant QT prolongation and episodes of TdP. Investigations ruled out electrolyte imbalances and other common causes of QT prolongation. Immediate treatment with intravenous magnesium successfully terminated the TdP, and doxepin was discontinued. Subsequent monitoring showed normalization of the QT interval and resolution of symptoms. This case highlights the necessity for clinicians to be vigilant about the cardiovascular side effects of doxepin, even in patients without pre-existing risk factors. Regular monitoring of the QT interval and consideration of alternative medications should be considered in patients at risk of prolonged QT intervals.

Keywords:- Torsades de Pointes, Doxepin, QT Interval, Drug-Induced Arrhythmia

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INTRODUCTION

Torsades de Pointes (TdP) is a unique and life-threatening form of polymorphic ventricular tachycardia, often associated with a prolonged QT interval on an electrocardiogram (ECG). This arrhythmia is characterized by a twisting of the peaks of the QRS complexes around the isoelectric line, which can lead to sudden cardiac death if not promptly recognized and managed. The incidence of TdP increases with factors such as drug-induced QT prolongation, electrolyte imbalances, and genetic predispositions.[1]

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TdP often occurs in the context of drugs that prolong the QT interval through blockade of the hERG potassium channels, which are critical for cardiac repolarization.[2] Doxepin, a tricyclic antidepressant, is known for its anticholinergic and sedative properties, and its capacity to prolong the QT interval, thus increasing the risk of TdP. While common in certain high-risk populations, such as older adults and those with underlying cardiac anomalies, TdP is less frequently reported in the general population, making each case significant for clinical learning and prevention.[3]

Patients with TdP may present with sudden episodes of dizziness, palpitations, or syncope. The diagnosis is primarily confirmed via ECG that exhibits characteristic features of a prolonged QT interval followed by polymorphic ventricular tachycardia.[4] The recognition of these features in a timely manner is crucial for the prevention of progression to more severe outcomes.[5]

The following case of a 45-year-old female experiencing TdP while on doxepin therapy is particularly instructive as it highlights the drug's potential to cause serious cardiac events even in patients without apparent predisposing factors. It underscores the necessity of monitoring QT intervals in patients prescribed QT-prolonging medications, especially in populations where multiple risk factors may coexist.[6]

CASE REPORT

A 45-year-old female with a history of major depressive disorder presented to the emergency department complaining of sudden episodes of dizziness and near-syncope. She had been prescribed doxepin two weeks prior to manage her depressive symptoms.

Initial ECG findings displayed marked QT prolongation and episodes of TdP. The patient’s electrolytes were checked and found to be normal, eliminating electrolyte imbalance as a contributing factor. Further investigation into her medical history revealed no genetic predisposition or previous cardiac events. Blood tests, including cardiac enzymes, were within normal limits, indicating no acute cardiac injury.

The acute management involved the administration of intravenous magnesium, which effectively terminated the TdP. Doxepin was immediately discontinued, and the patient was started on a different class of antidepressants with no known association with QT prolongation. She was kept under observation in the hospital with continuous cardiac monitoring for 72 hours during which her QT intervals returned to normal, and no further arrhythmic episodes occurred. She was discharged with recommendations for follow-up ECGs and a consultation with a cardiologist.

DISCUSSION

This case adds to the body of literature on drug-induced TdP, highlighting the risk associated with doxepin, even in patients without typical risk factors for QT prolongation.[7] It emphasizes the importance of considering baseline ECGs before starting medications known to affect cardiac repolarization. [8]

A review of similar cases reveals that while cases of doxepin-induced TdP are rare, they notably occur across various age groups and often in the absence of overt cardiac dysfunction. For example, a study by Zeltser D et al reported that in majority of the cases risk factors for TdP can be identified, underscoring the need for analysing the risk factors in these cases. [9]

Key discussion points include the mechanisms by which doxepin prolongs the QT interval, strategies for monitoring and managing patients on doxepin, and the potential need for alternative therapeutic options for patients at risk of cardiac side effects. The comparison with other tricyclic antidepressants that have a lower incidence of TdP may also be relevant for future prescribing practices.[10]

CONCLUSION

This case report illustrates the critical need for awareness and monitoring of QT prolongation in patients prescribed doxepin, especially in those without evident risk factors. Early detection and management of TdP can prevent fatal outcomes, emphasizing the importance of cautious use of QT-prolonging medications and regular cardiac monitoring.

Conflict of interest

None

Source of Funding

None

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Author Contribution:- QPJ: Concept Of Design;Manuscript Preparation;Revision Of Manuscript;Review Of Manuscript

How To Cite This Article

Qureshi PJ, Doxepin Induced Torsades de Pointes in a Middle-aged Female: A Case Report Int. j. med. case reports. 2023; 4 (3): 15-17