

Prenylamine Induced Prolonged QT Syndrome and Ventricular Tachycardia

By

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INTRODUCTION

Prenylamine a calcium antagonist is a widely used anti-anginal drug and is generally considered safe.¹ Indeed very few life threatening arrhythmias have been reported with its use.²⁻³ Thus the association of ventricular arrhythmias with prenylamine is of special interest, especially in view of the fact that it can be anticipated and thus avoided. We shall discuss the presentation and mode of treatment of two cases with prolonged QT intervals and serious symptomatic ventricular tachycardia caused by Prenylamine.

CASE REPORTS

A 45 year old woman, a case of congestive cardiomyopathy, was treated with antifailure

medication for seven months. Prenylamine lactate was administered in 180 mg/day dosage. On the seventh day, she had syncope and collapsed at home. Ventricular tachycardia was recorded in the Intensive Cardiac Care Unit (ICCU) which did not respond to intravenous xylocaine and quinidine therapy. On further analysis of the ECG a diagnosis of torsade de pointes was made (Fig. 1A and B). Intravenous isoprenaline infusion cardioverted the arrhythmia and sinus rhythm ensued (Fig. 1C). The electro-cardiogram during sinus rhythm showed a rate of 107/min., left bundle branch block, PR interval of 0.22 sec. and QT interval of 0.52 sec. (QTc. 0.70 sec). Biochemical investigations were normal.

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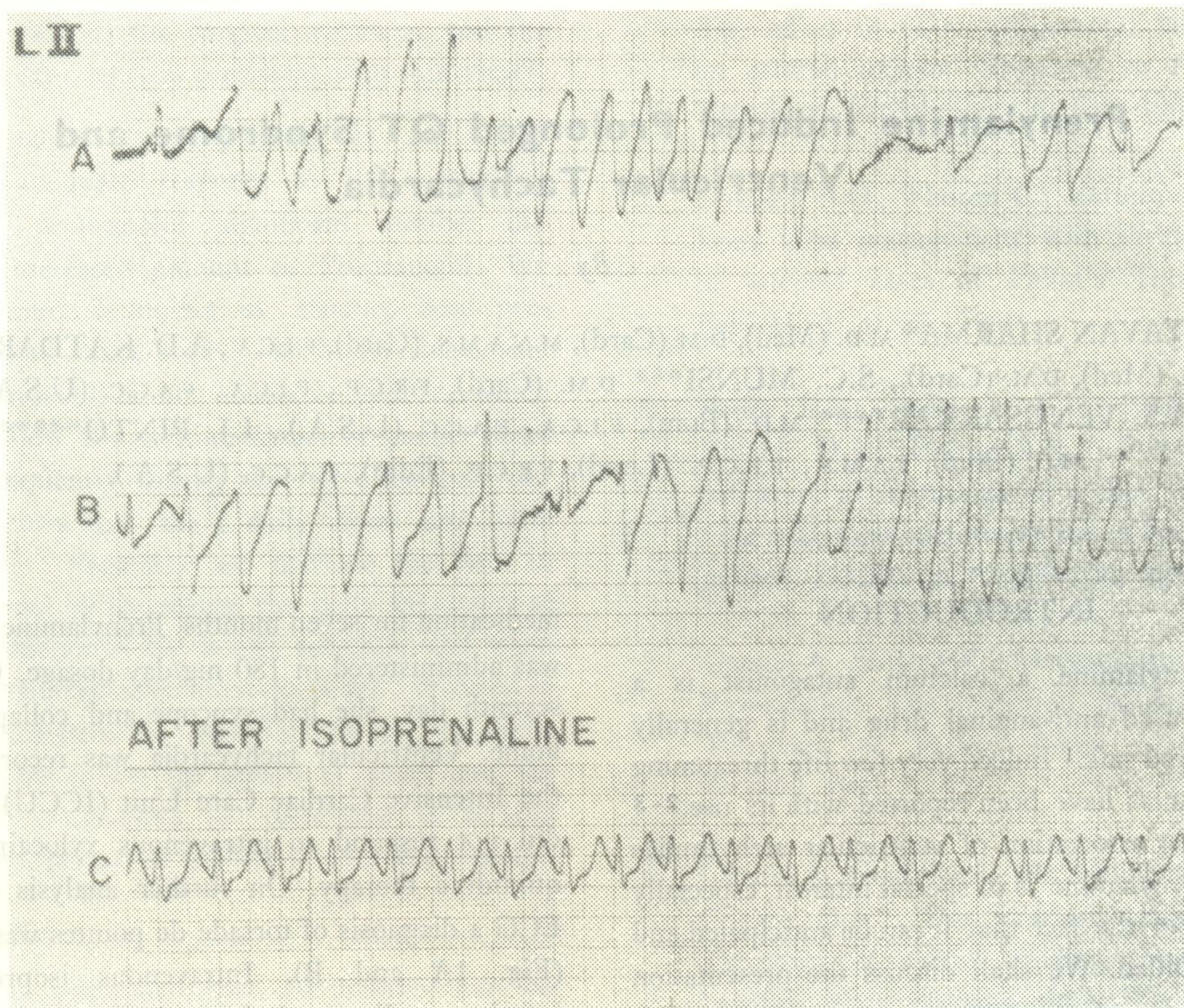


Fig. 1: Strip A and B depict ventricular tachycardia of torsade de pointes variety. Strip C shows sinus tachycardia following isoprenaline infusion.

Second case, a 70 year old woman had chronic stable angina for two years and serial electrocardiograms showed a normal QT interval. Prenylamine lactate in dosage of 240 mg/day was administered. A month later she was admitted for giddiness lasting for a day. Her electrocardiogram showed a sinus rate of 60/min. and QT interval of 0.60 sec. (QTc 0.73 sec) (Fig. 2A and B). The serum potassium was 3.8 mEq/Lit. and

other investigations were normal. Six hours later she had a run of ventricular tachycardia (Fig. 2C) which did not respond to xylocaine but converted to sinus rhythm following isoprenaline infusion. In both patients following discontinuation of prenylamine, the QT interval reverted to normal and there was no recurrence of arrhythmia.

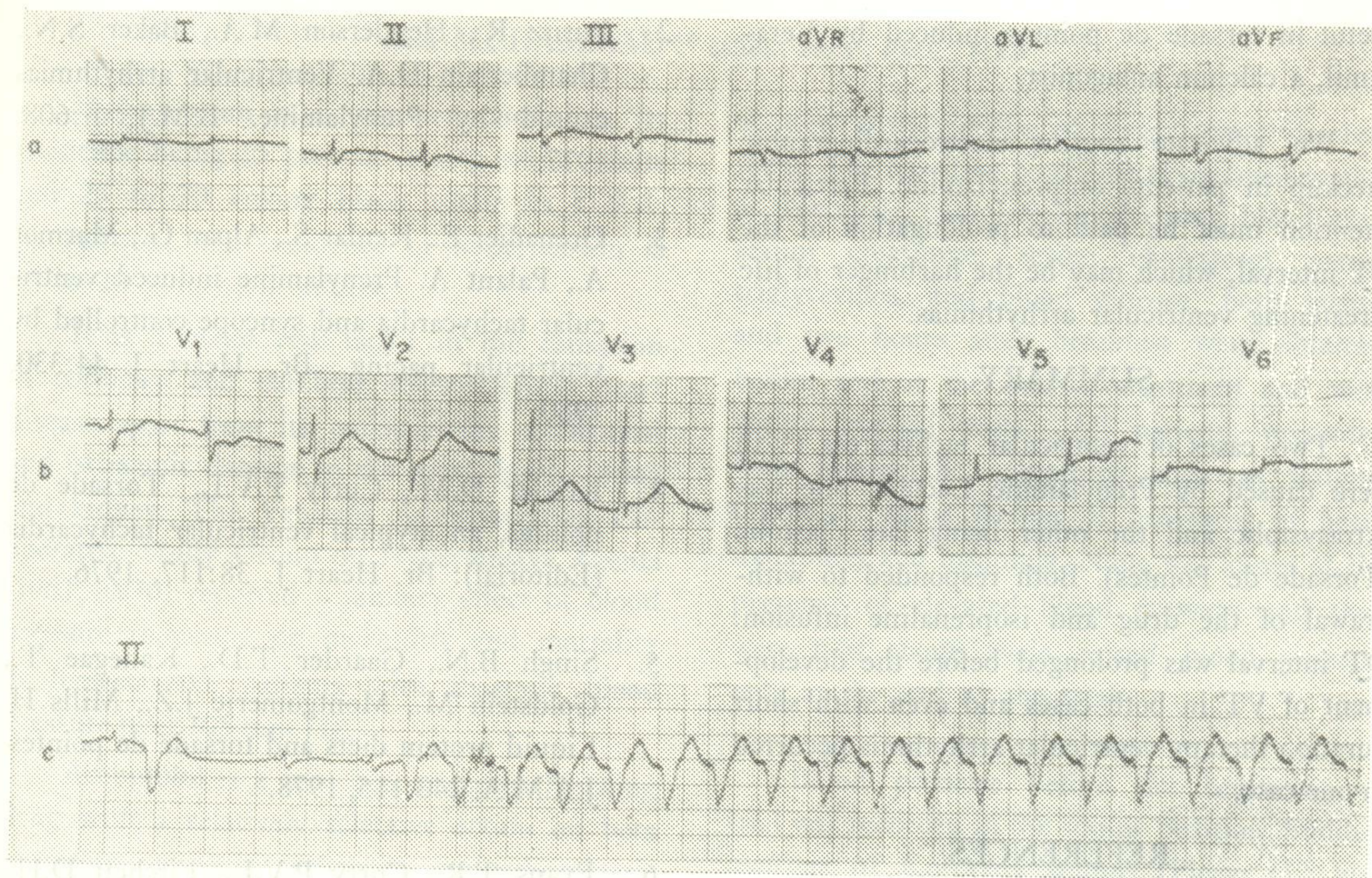


Fig. 2: Strip A and B demonstrate prolonged QT interval (0.60 sec, QTc 0.73 sec) Strip C depicts ventricular premature beat initiating a run of extrasystolic ventricular tachycardia.

DISCUSSION

Prenylamine prolongs the QT interval owing to its quinidine like properties. The long repolarisation time favours a state of asynchronous depolarization and may lead to reentrant arrhythmias.¹ Ventricular tachycardia may display the features of torsade de pointes⁴ in form of late diastolic ventricular premature beat, undulating QRS axis and prolonged QT interval as seen in the first case. The arrhythmia may progress to fatal ventricular fibrillation in some cases specially if its character is not recognised.

The management of ventricular arrhythmia in patients with prolongation of QT interval involves withdrawal of the offending drug, cor-

rection of any electrolyte imbalance and use of agents which shorten the repolarization period. It is important to avoid the use of group I antiarrhythmic drugs which may perpetuate or worsen the arrhythmia.⁵ The immediate intravenous infusion of isoprenaline reduces the state of asynchronous depolarization and reentry and often helps to abolish the tachycardia as happened in both the patients⁴. Ventricular pacing apart from being time consuming may at times induce torsade de pointes.⁶ Overdrive atrial pacing remains the method of choice in patients with no response to isoprenaline infusion. In resistant cases, we recommend the use of 20 cc intravenous calcium gluconate as we have found this regime

useful in torsade de pointes induced by Verapamil, a calcium antagonist.

We advocate routine electrocardiographic checkup in patients on prenylamine. Particular attention must be paid to prolongation of the QT interval, which may be the harbinger of life threatening ventricular arrhythmias.

SUMMARY

Two cases of ventricular tachycardia (VT) were caused by Prenylamine Lactate, one was extrasystolic and the other being late diastolic (Torsade de Pointes). Both responded to withdrawal of the drug and isoprenaline infusion. QT interval was prolonged before the development of VT in both cases and even with short duration therapy ventricular arrhythmia occurred in one case.

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