A Rare Case of Glycopyrrolate Induced Biventricular Takotsubo Cardiomyopathy

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BACKGROUND

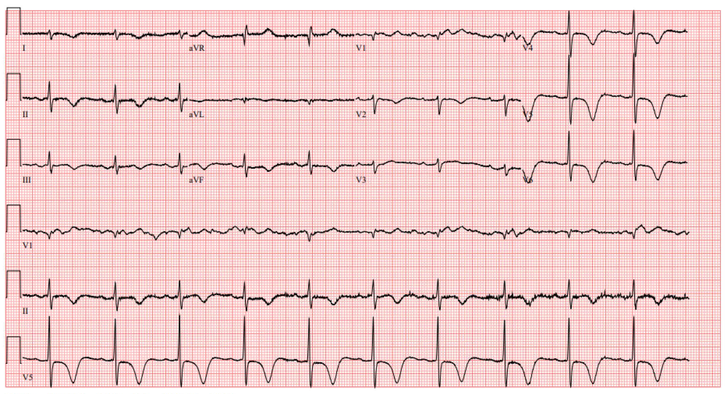
Glycopyrrolate competitively blocks acetylcholine and can be used to reverse intraoperative bradycardia. We present a rare case of glycopyrrolate induced biventricular Takotsubo cardiomyopathy (TCM).

CASE PRESENTATION

An 86-year-old female with persistent symptomatic atrial fibrillation presented for an elective ablation. Intra-procedurally, patient developed marked sinus bradycardia along with hypotension and received glycopyrrolate for reversal.

Patient immediately developed nonsustained ventricular tachycardia with subsequent sinus tachycardia and ST elevations in inferior leads. Emergent coronary angiogram revealed patent coronaries. Transthoracic echocardiogram (TTE) showed severe biventricular dysfunction (LVEF and RVEF 20-25%) with preserved basal contractility along with severe mid to apical biventricular akinesis diagnosing biventricular TCM.

FIGURE 1



EKG indicating sinus rhythm with 1st degree AV block, prolonged QT, ST and marked diffuse T wave inversions, concerning for anterolateral ischemia.

DISCLOSURE INFORMATION

The authors have no disclosures.

Glycopyrrolate has a **fast anti-cholinergic onset** of action, inhibiting **parasympathetic** response, leading to unopposed, **exaggerated sympathetic** response

Catecholamine surge can result in **transient reversible LV systolic dysfunction** accompanied by regional wall motion abnormalities in the **absence of obstructive coronary artery disease**

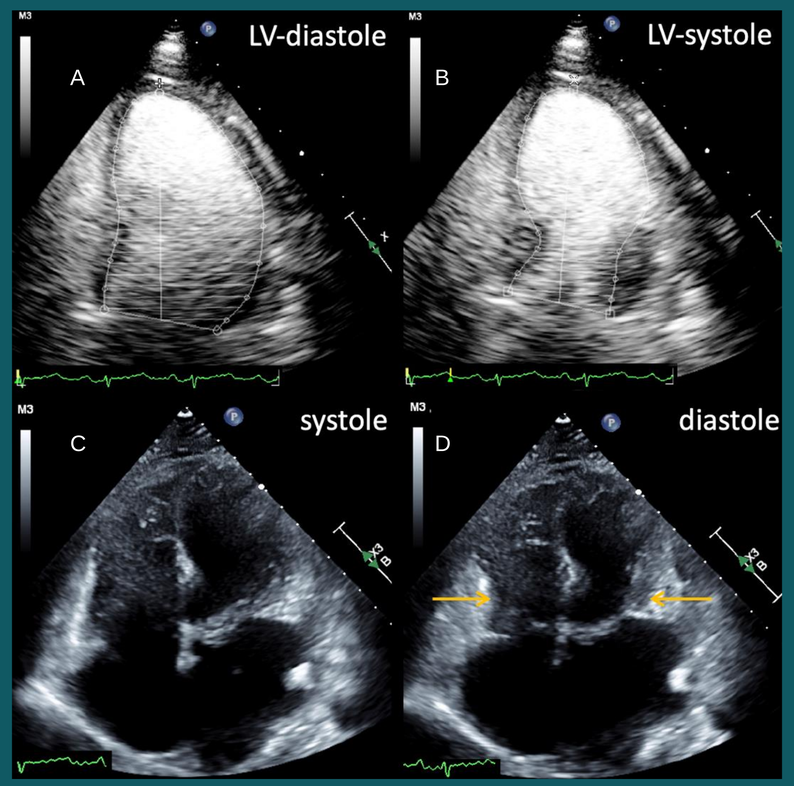


Figure 2: Apical four-chamber view with definity contrast in ventricular diastole (a) and ventricular systole (b) demonstrating severe hypokinesis of mid to apical entire left ventricle with preserved basal contractility. Right ventricle also demonstrates preserved basal contractility with severe hypokinesis of the mid to apical right ventricle (c and d). Differentials include ischemic cardiomyopathy versus severe biventricular stress-induced cardiomyopathy.

MANAGEMENT

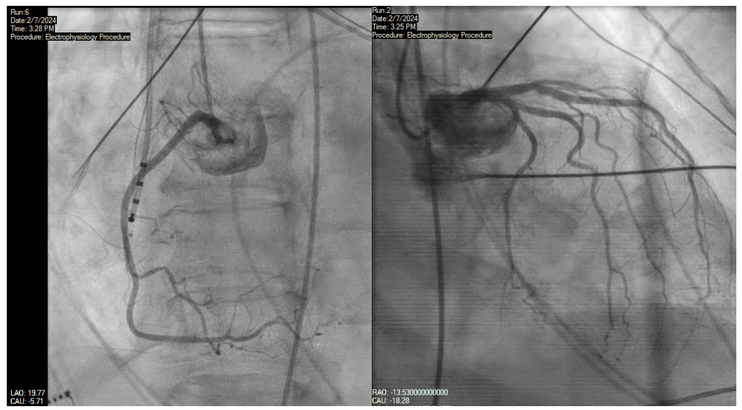
Patient was managed with diuretics and goal directed medical therapy for acute heart failure and TCM. Repeat TTE one month post operatively demonstrated normalization of biventricular function and resolution of wall motion abnormalities.

CONCLUSIONS

Excessive sympathetic stimulation has been linked to TCM development. Glycopyrrolate has a fast anticholinergic onset of action of within one minute, inhibiting parasympathetic response leading to unopposed, exaggerated sympathetic response which can in-turn precipitate development of TCM.

This rare case emphasizes importance of early recognition and prompt management of acute adverse cardiac reaction from glycopyrrolate to improve patient outcomes.

FIGURE 3



Left and right coronary artery demonstrating mild nonobstructive coronary artery disease.

REFERENCES

1. Haslam, N. R., George, N., Cubas, G., Trainer, C., & Herrey, A. S. (2019). Reverse Takotsubo cardiomyopathy after intravenous glycopyrrolate administration postpartum. British journal of anaesthesia, 123(5), e515–e517. https://doi.org/10.1016/j.bja.2019.08.007
2. Kido, K., & Guglin, M. (2017). Drug-Induced Takotsubo Cardiomyopathy. Journal of cardiovascular pharmacology and therapeutics, 22(6), 552–563. https://doi.org/10.1177/1074248417708618